OBRADOV, S.; REZAKOVIC, Dz.; CERIMOVIC, S.; TEFTEDARJA, M.

Acute leukoses at the Clinic of Internal Diseases in Sarajevo from 1949 to 1959. Bul sc Youg 7 no.1/2:8 F-Ap '62.

1. Medicinski fakultet, Sarajevo.

*

BELIC, I.; CERIN, B.

The occurrence of casticin in seeds of Vitex species. Vest Slov kem dr 9 no.1/2:33-34 Ja-Je '62.

1. Institut za kemijo, Medicinska fakulteta, Ljubljana, Yugoslavia.

CERINEO, Miko A.

Improvements in the continuous-diffusion cloud-chamber
method. Aleksandar B. Milojević, Miko A. Cerineo, and
Branislav I. Lalović (Inst. Nuclear Sci. "Boris Kidrich",
Belgrade, Yugoslavia). *Bull. Inst. Nuclear Sci. "Boris
Kidrich"* (Belgrade) 3, No. 33, 23-7(1953); cf. Nucleonics
Atomics 3, 221(1952); Cowan, *C.A.* 46, 4017*g*; follow-
ing abstr.—Expts. were made with vapors of glycol
($C_2H_6O_2$) with the bottom and top plates maintained at 0
and 150°, resp., but the results were not satisfactory.
Expts. were made with EtOH vapor with the top plate at
20 to 30° and the bottom between −100 and −140°. A
standardized, cylindrical-type chamber was used. The Cu
cylinder was dipped into liquid air. The chamber was de-
signed to work up to 4 atms. of pressure. The photography
was carried out with an anastigmatic lens (f = 1:1.8) and
Ilford HP 3 film, and the illumination was provided by a Xe
flash tube, run at about 500 joules. Using air as the inert
gas gave a sensitive region of 7-cm. thickness. Tracks
originating from cosmic rays and secondary electrons from
an outer weak source of Rn were sharp. With CH_4 as the
inert gas at a pressure of 2 atms., 2 Po-α sources were
mounted inside the chamber; one with 20 μ of paraffin and
a thin sheet of mica so that only recoil protons entered the
chamber. An outer Ra-Be source gave recoil protons from
n-p collisions. The working conditions were almost the
same as with air. A great no. of proton, β, and α-tracks,
and some C recoil tracks were visible. No spoiling of opera-
tion was observed after the illuminating flash. During the
work with air, deterioration is due to ozone formed by ultra-
violet light. With the Po-α source covered by paraffin
and mica only cosmic radiation and recoil proton tracks
could be formed. Further cooling of the bottom plate
gave more distinct proton tracks, and the β-tracks dis-
appeared. By using liquid air as the means for cooling the
bottom plate of a diffusion cloud chamber very steady work-
ing conditions can be obtained. Moreover, the expts. per-
formed showed very definitely that such a chamber, because
of the discrimination effect, could be successfully used in all
expts. in which heavy particles are to be recorded. The dis-
crimination effect offers the possibility of using a multiplier
for automatic triggering of the photographic system, when-
ever an event happens in which heavy particles are emitted.
Such an improved diffusion cloud chamber can also be used
in the spectrography of neutrons. C. J. O'Brien

8-19-54

CERINEO, M.A.

CERINEO, Miko. A.

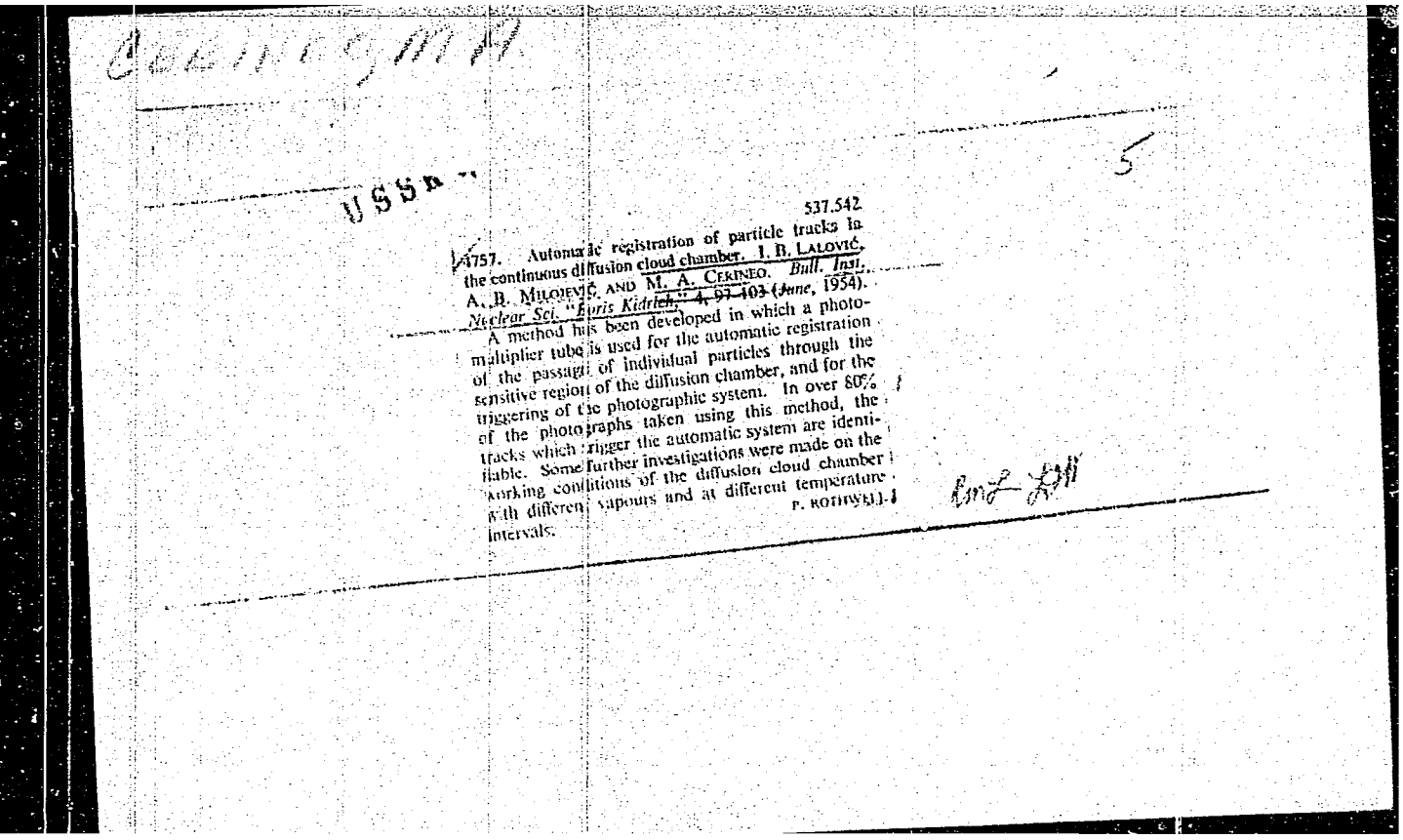
Chemical Abst.
Vol. 48 No. 3
Feb. 10, 1954
Nuclear Phenomena

(5) Nuc Sci

High-intensity flash tubes for laboratory purposes. Aleksandar B. Kitchevic and Miko A. Cerineo (Inst. Nuclear Sci. "Boris Kidrich", Belgrade, Yugoslavia). *Bull. Inst. Nuclear Sci. "Boris Kidrich"* (Belgrade) 3, No. 36, 47–55(1953); cf. Jenkins and Chippendale, *Philips' tech. Rundschau* 14, 213(1953).—A simple and useful type of Xe-filled, high-intensity flash tube has been developed with a max. output in the visible region of over 30,000 lumens/sec. The tube is of Pyrex or quartz, with fused-in W electrodes 1.5 mm. in diam. A third outer electrode of well-polished Al foil is employed to flash the lamp, serving at the same time as a reflector for the emitted light. The measurements of the light flux were made with a photocell and a ballistic galvanometer. Different illumination systems for work with Wilson cloud chambers were investigated. It was found that the dependence of the total light flux on different factors can be expressed as $\Phi = kZ\,p^{1}\varphi(d)\,E$, where Z is the at. no. of the rare gas used, p the pressure to which the lamp is filled, d the diam. of the active part of the tube, and E the energy used for the discharge.

C. J. O'Brien

8-19-54
BNL



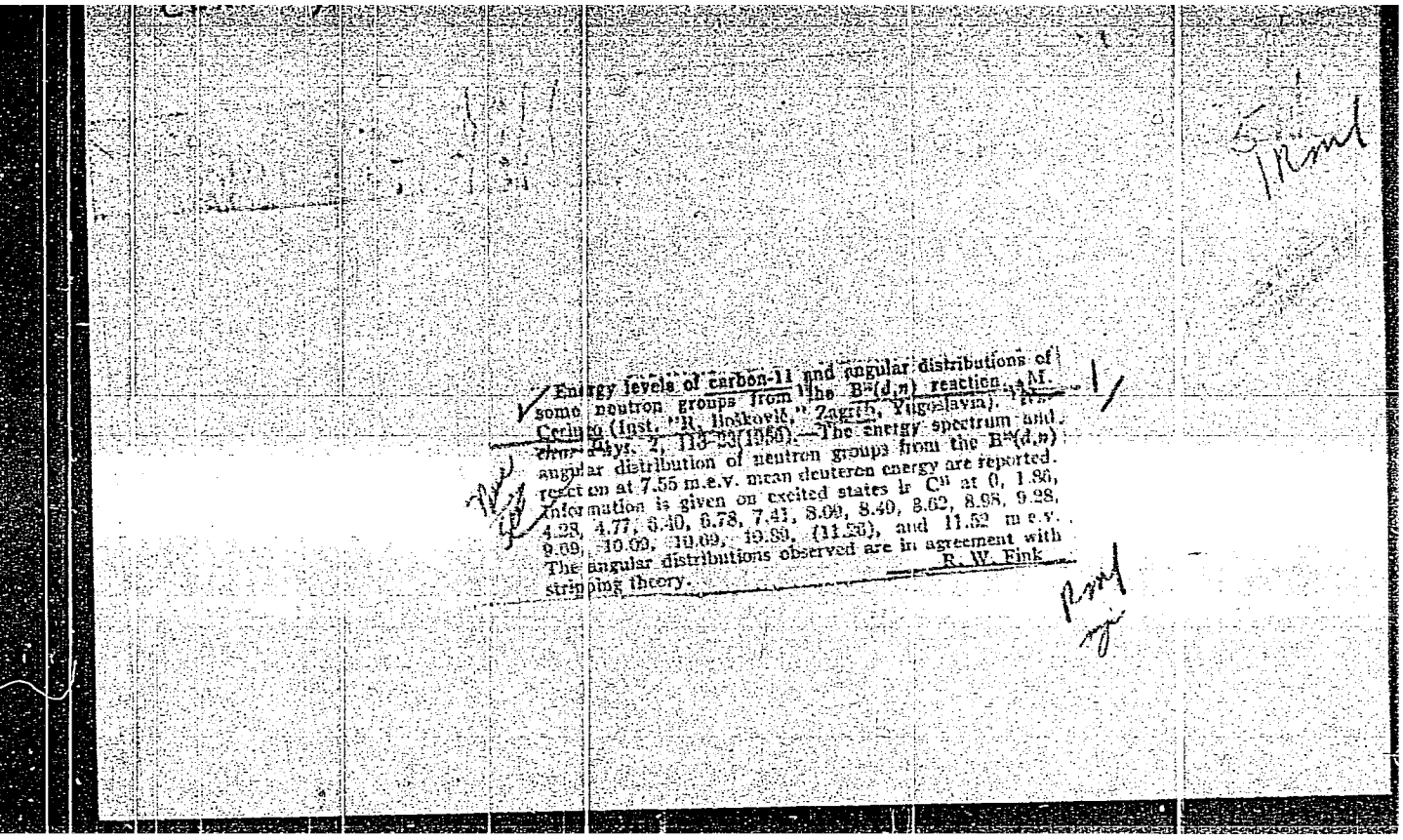
USSR

537.542

4757. Automatic registration of particle tracks in the continuous diffusion cloud chamber. I. B. LALOVIĆ, A. B. MILOJEVIĆ, AND M. A. ĆERINEO. *Bull. Inst. Nuclear Sci. "Boris Kidrich"*, 4, 97–103 (*June*, 1954).

A method has been developed in which a photomultiplier tube is used for the automatic registration of the passage of individual particles through the sensitive region of the diffusion chamber, and for the triggering of the photographic system. In over 80% of the photographs taken using this method, the tracks which trigger the automatic system are identifiable. Some further investigations were made on the working conditions of the diffusion cloud chamber with different vapours and at different temperature intervals.

P. ROTHWELL



Energy levels of carbon-11 and angular distributions of some neutron groups from the $B^{10}(d,n)$ reaction.—M. Cerineo (Inst. "R. Boškovič," Zagreb, Yugoslavia). Nucl. Phys. 2, 113–23(1956).—The energy spectrum and angular distribution of neutron groups from the $B^{10}(d,n)$ reaction at 7.55 m.e.v. mean deuteron energy are reported. Information is given on excited states in C^{11} at 0, 1.96, 4.28, 4.77, 6.40, 6.78, 7.41, 8.09, 8.40, 8.62, 8.98, 9.28, 9.69, 10.09, 10.69, 10.80, (11.53), and 11.52 m.e.v. The angular distributions observed are in agreement with stripping theory.—R. W. Fink

AJDACIC, Vladimir S.; CERINEO, Miho A.; DIMITRIJEVIC, Zivan Dj. [Dimitrijevic, Zivan D.]; MILOJEVIC, Aleksandar B.

Low pressure expansion cloud chamber. Bul Inst Nucl 10:33-42 Mr '60. (EEAI 10:5)

1. Institute of Nuclear Sciences "Boris Kidrich" Laboratory of Physics.
(Cloud chamber)

ZAIKA, N.I.; NEMETS, O.F. [Nenec, O.F.]; TSERINEO, M.A. [Cerineo, M.A.]

Angular distribution of protons from the C^{12} (dp) C^{13} reaction with deuteron energies of 5 to 13 Mev. Zhur. eksp. i teor. fiz. 39 no. 1:3-6 Jl '60. (MIRA 13:12)

1. Institut "Rudzher Boshkovich", Zagreb, Yugosloviya.
(Protons) (Carbon--Isotopes) (Nuclear reactions)

PAIC, V.; PAIC, M.; PRELEC, K.; CERINEQ, M.; ILAKOVIC, K.; SLAUS, I.; TOMAS,P; VALKOVIC, V.; LJOLJE, K.; SIPS, V.

Review of peridoicals; physics. Bul sc Youg 9 no.4/5:126 Ag-O '64.

1. Ruder Boskovic Institute, Zagreb.

CERJAK, Polde (Maribor); BRALIC, Bogoljub, ing. [translator]

Experiences from the introduction of the propane-heating and propane-cutting techniques in the "Metalna" Factory. Zavarivanje 3 no.4/5:84-91 My '60

1. "Metalna", Maribor (for Cerjak).
2. Clan Redakcionog kolegija, "Zavarivanje" (for Bralic).

OCEPEK, Drago, dr. inz., docent; CERK, Nevenka

Dressing of Fe-Ni ores from the Mokra Gora and Vardiste area.
Rud met zbor no.1:35-39 '62.

1. Oddelek za montanistiko, Askerceva 20, Ljubljana.

CERVASIN, A.

CERVASIN, A. Classification of Moravian rivers according to the variablity of the flow. p. 116.

Vol. 5, No. 4, Apr. 1955
VODNI HOSPODARSTVI
TECHNOLOGY
Praha, Czechoslovakia

So: East European Accessions, Vol. 5, No. 5, May 1956

CERKASIN, A.

Flood on the Zravka creek. p. 538.

VODNI HOSPODARSTVI. (Ministerstvo energetiky a nodniho hospodarstvi a Vedecka technica spolecnost pro vodni hospodarstvi) Praha, Czechoslovakia, No. 12, Dec. 1959.

Monthly List of East European Accession (EEAI), LC Vol. 9, no. 2, Feb. 1960

Uncl.

CZECHOSLOVAKIA

CERKASOV, J., FOUSTKA, M; Zoological Institute, Charles University (Zoologicky Ustav UK), Prague.

"Isolation of Mitochondria from Tissue Dried by Freeze Sublimation in Nonconductive Media."

Prague, Ceskoslovenska Fysiologie, Vol 15, No 2, Feb 66, p 125

Abstract: The method suggested by the authors is based on a quick fixation of the tissue in liquid nitrogen at -200°C, sublimation drying at -60°, homogenization in a non-polar medium (mixture of olive oil, petrolether and freon 113) and separation of the homogenate by gradient centrifuging at -20°C in non-polar media. A fraction containing 90% mitochondria can be obtained. No references. Submitted at "16 Days of Physiology" at Kosice, 27 Sep 65.

CZECHOSLOVAKIA

CERKASOVOVA, A; Parasitological Institute, Czehoslovak Academy of Sciences, Protozoological Department (Parasitologicky Ustav CSAV, Protozoologicke Odd.) Prague.

"On the Energy Metabolism of Trichomonas Foetus."

Prague, Ceskoslovenska Fysiologie, Vol 15, No2, Feb 66, p 122

Abstract: Trichomonas Foetus is adapted to semianaerobic conditions; its breathing is stimulated by glucose, 2, 4-dinitrophenol and HCN. Under anaerobic conditions, it uses glycogen, and after anoxia it recovers oxygen. No references. Submitted at "16 Days of Physiology" at Kosice, 27 Sep 65

[redacted]

CERKES, L.; DOSKOCIL, J.; CERKESOVA, J.

Contribution to the method of color prints in biologically developed chromatograms.

P. 185, (Ceskoslovenska Mikrobiologie) Vol.2, no.3, June 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

PECAK, V.; CIZEK, S.; MUSIL, J.; CERKES, L.; HEROLD, M.; BELIK, E.; HOFFMAN, J.

Stimulation of chlortetracycline production by benzyl thicoyanate. J. Hyg. Epidem., Praha 2 no.1:111-115 1958.

1. Institute of Antibiotic Research, Roztoky, near Prague, Czechoslovakia.
(THIOCYANATES, effects
benzyl thiocyanate stimulation of chlortetracycline prod. by Streptomyces strains)
(CHLORTETRACYCLINE, preparation of
prod. by Streptomyces strains, stimulation by benzyl thiocyanate admin.)
(STREPTOMYCES, metabolism
aureofaciens prod. of chlortetracycline, stimulation by benzyl thiocyanate admin.)

CZECHOSLOVAKIA/Human and Animal Morphology - Normal, Pathological. S
Methods and Technique of Investigation.

Abs Jour : Ref Zhur Biol., No 23, 1958, 105871

Author : Cerkes, L.,Doskocil, J., Cerkesova, J.
Inst : -
Title : A Contribution to the Method of Coloured Prints in Bioautography

Orig Pub : Folia biol. (Ceskosl.), 1958, 4, No 1, 61-62

Abstract : The method of colored prints in bioautography was used on slides with gram-positive and gram-negative bacteria, and also with certain fungi. To obtain the chromatogram the slides are covered with a solution of gentian-violet; after one-half to one minute the stain is removed and the slide is covered with Lugol's solution. Thereafter, the slide is treated for three minites with a solution of ethanol or acetone. The solution is removed, the slide is washed in water and a quantitative analysis of the

Card 1/2

CZECHOSLOVAKIA/Human and Animal Morphology - Normal and Pathological. Methods and Technic of Investigation. 8

Abs Jour : Ref Zhur Biol., No 23, 1958, 105871

chromatogram is performed. Another method is possible: the slide is covered with a one percent aqueous solutions of malachite green; after its removal the slide is washed out in water and in a solution of alcohol, and then in acetone for three to five minutes. The obtained green print is suitable for quantitative analysis. -- N.A. Podkaminskiy

Card 2/2

CZECHOSLOVAKIA/Human and Animal Physiology. Metabolism.. T

Abs Jour: Ref Zhur-Biol., No 20, 1958, 92998.

Author : Cerkes, L.
Inst :
Title : Experimental Deficiency of Choline. Its Clinical Meaning.

Orig Pub: Ceskosl. gastroenterol. a vyziva, 1958, 12, No 1, 18-21.

Abstract: No abstract.

Card : 1/1

L 40816-66 EWP(j)/T IJP(c) WW/RM

ACC NR: AP6013156 (A) SOURCE CODE: CZ/0078/66/000/004/0012/0012

INVENTOR: Cerk[illegible], Jan (Trebec); Ossendorf, Miroslav (Ceske Budejovice); Tesar, Autonin (Vcelna u Ceskych Budejovic)

48
B

ORG: None

TITLE: [A method for producing a choke coil] CZ Pat. No. PV 5905-61, Class 21d

SOURCE: Vynalezy, no. 4, 1966, 12

TOPIC TAGS: electric filter, glass fabric, epoxy plastic, electric inductance, self induction, ULTRASONIC FREQUENCY

ABSTRACT: This patent introduces a method for making a choke to supress transmission of supersonic frequencies in the 10-500 kc range on outside installations and high-tension cables. The choke is made by weaving conductive tape into a hollow disc-shaped coil. The best type of conductive tape is made from aluminum with an interlayer of artificial insulation. The conductive tape should be at least 30 times as long as it is wide. A tape woven from fiberglass at least 10 mm wider than the conductive tape is presaturated with epoxy resin. This glass tape is placed over the conductive tape in such a way that it extends beyond the edges on both sides. The double tape is then wound into the appropriate disc-shaped coil with alternating layers of conductive tape and glass fabric. The outside diameter of the coil is 2 or 3 times its inside

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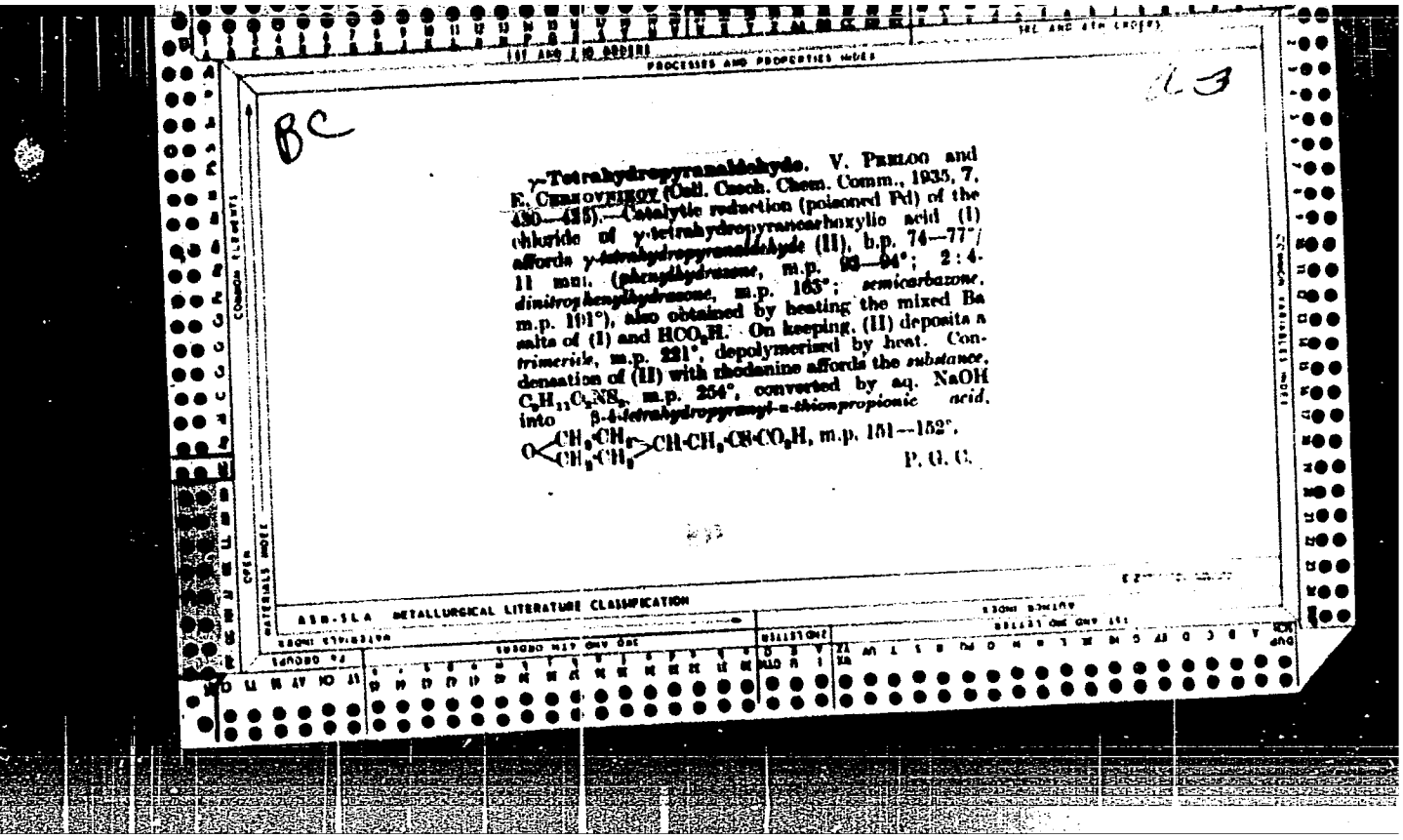
ACC NR: AP6013156 O

diameter. The coil is then heated to the softening point of the glass fabric and the edges are pressed. After cooling, the coil is removed from the furnace in the form of a solid unit with machanical resistance to short-circuit currents. [Translation]

SUB CODE: 09/ SUBM DATE: 05Oct61

Card 2/2 LC



BC

L 3

γ-Tetrahydropyranaldehyde. V. Prelog and F. Cerkovnikov (Coll. Czech. Chem. Comm., 1935, 7, 430—435).—Catalytic reduction (poisoned Pd) of the chloride of γ-tetrahydropyrancarboxylic acid (I) affords γ-*tetrahydropyranaldehyde* (II), b.p. 74—77°/11 mm. (*phenylhydrazone*, m.p. 93—94°; 2 : 4-*dinitrophenylhydrazone*, m.p. 165°; *semicarbazone*, m.p. 191°), also obtained by heating the mixed Ba salts of (I) and HCO_2H. On keeping, (II) deposits a *trimeride*, m.p. 221°, depolymerised by heat. Condensation of (II) with rhodanine affords the *substance*, $C_9H_{11}O_2NS_2$, m.p. 254°, converted by aq. NaOH into *β-4-tetrahydropyranyl-α-thiopropionic acid*, $O<\begin{matrix}CH_2\cdot CH_2\\CH_2\cdot CH_2\end{matrix}>CH\cdot CH_2\cdot CS\cdot CO_2H$, m.p. 151—152°.

P. G. C.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

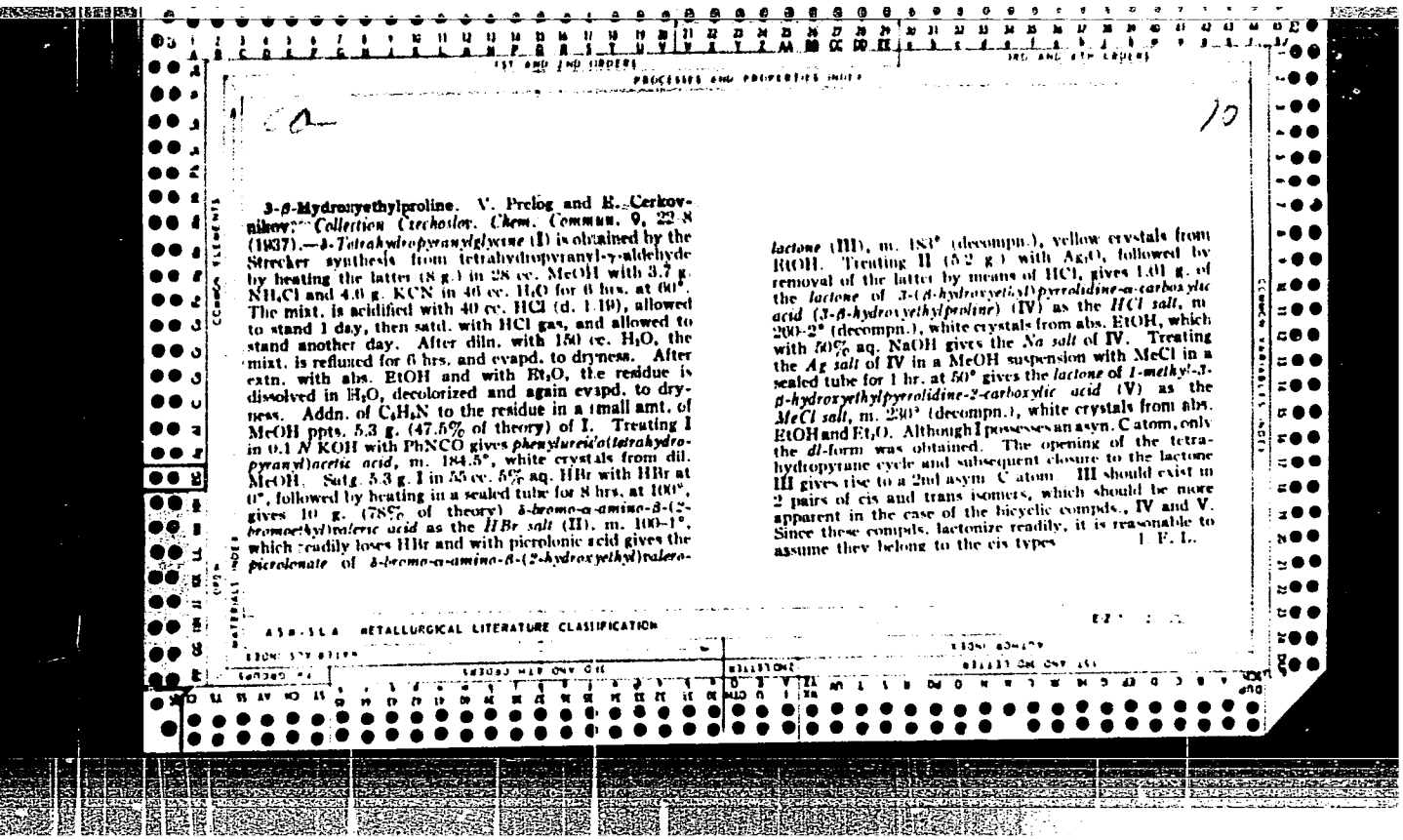
CA

18

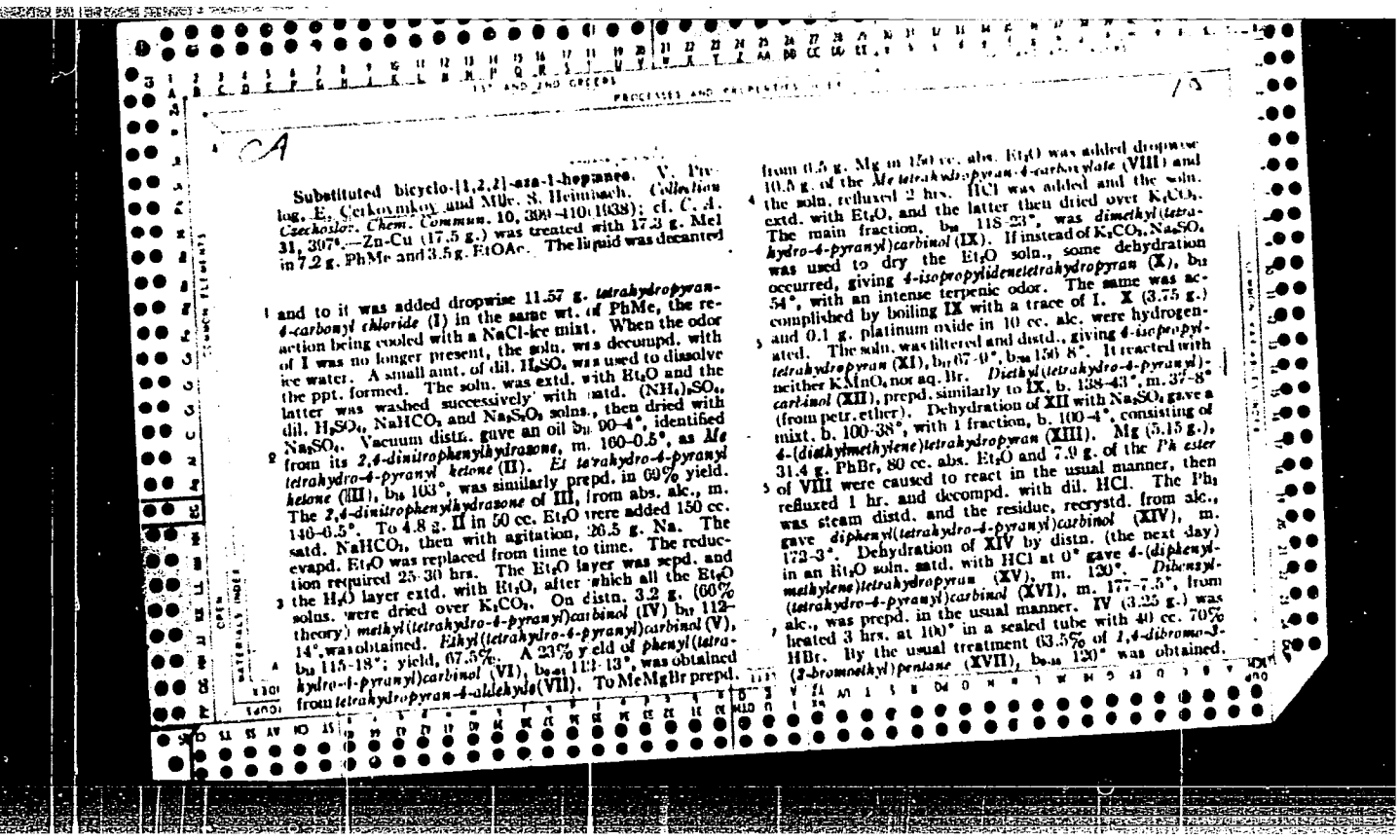
...ative earths for bleaching of oils, with special refer-
ence to the possibility of their improvement by activation.
M. Krajčinović and B. Cerkovnikov. *Arhiv. Kem.*
Farm. 9, 1-9(in German 10-11)(1935); cf. *C. A.* 30,
2831.—Natural bleaching earths contg. larger amts. of
molecularly bound water, in addn. to the hygroscopic
H_2O, are very suitable for activation. In agreement with
data given in the literature, it has been found that those
earths which show the curve for loss of water approaching
a straight line are more suitable for activation. The
absorption capacity can be increased in these earths, with
bleaching activity, by heating to 350°. Heating to a
higher temp. gradually lowers this capacity. The activa-
tion is more effective when the raw earths are heated with
acids (HCl) to 350°. J. Kučera

COMMON ELEMENTS

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



3-β-Hydroxyethylproline. V. Prelog and E. Cerkovnikov. *Collection Czechoslov. Chem. Communs.* 9, 22-8 (1937).—*δ-Tetrahydropyranylglycine* (I) is obtained by the Strecker synthesis from tetrahydropyranyl-γ-aldehyde by heating the latter (8 g.) in 28 cc. MeOH with 3.7 g. NH_4Cl and 4.6 g. KCN in 40 cc. H_2O for 6 hrs. at 60°. The mixt. is acidified with 40 cc. HCl (d. 1.19), allowed to stand 1 day, then satd. with HCl gas, and allowed to stand another day. After dilu. with 150 cc. H_2O, the mixt. is refluxed for 6 hrs. and evapd. to dryness. After extn. with abs. EtOH and with Et_2O, the residue is dissolved in H_2O, decolorized and again evapd. to dryness. Addn. of C_5H_5N to the residue in a small amt. of MeOH ppts. 5.3 g. (47.5% of theory) of I. Treating I in 0.1 *N* KOH with PhNCO gives *phenylureido(tetrahydropyranyl)acetic acid*, m. 184.5°, white crystals from dil. MeOH. Satg. 5.3 g. I in 55 cc. 5% aq. HBr with HBr at 0°, followed by heating in a sealed tube for 8 hrs. at 100°, gives 10 g. (78% of theory) *δ-bromo-α-amino-β-(2-bromoethyl)valeric acid* as the *HBr salt* (II), m. 100–1°, which readily loses HBr and with picrolonic acid gives the *picrolonate* of *δ-bromo-α-amino-β-(2-hydroxyethyl)valerolactone* (III), m. 181° (decompn.), yellow crystals from EtOH. Treating II (5.2 g.) with Ag_2O, followed by removal of the latter by means of HCl, gives 1.01 g. of the *lactone* of *3-(β-hydroxyethyl)pyrrolidine-α-carboxylic acid* (*3-β-hydroxyethylproline*) (IV) as the *HCl salt*, m. 200–2° (decompn.), white crystals from abs. EtOH, which with 50% aq. NaOH gives the *Na salt* of IV. Treating the *Ag salt* of IV in a MeOH suspension with MeCl in a sealed tube for 1 hr. at 50° gives the *lactone* of *1-methyl-3-β-hydroxyethylpyrrolidine-2-carboxylic acid* (V) as the *MeCl salt*, m. 230° (decompn.), white crystals from abs. EtOH and Et_2O. Although I possesses an asyn. C atom, only the *dl*-form was obtained. The opening of the tetrahydropyrane cycle and subsequent closure to the lactone III gives rise to a 2nd asym. C atom. III should exist in 2 pairs of cis and trans isomers, which should be more apparent in the case of the bicyclic compds., IV and V. Since these compds. lactonize readily, it is reasonable to assume they belong to the cis types. I. F. L.



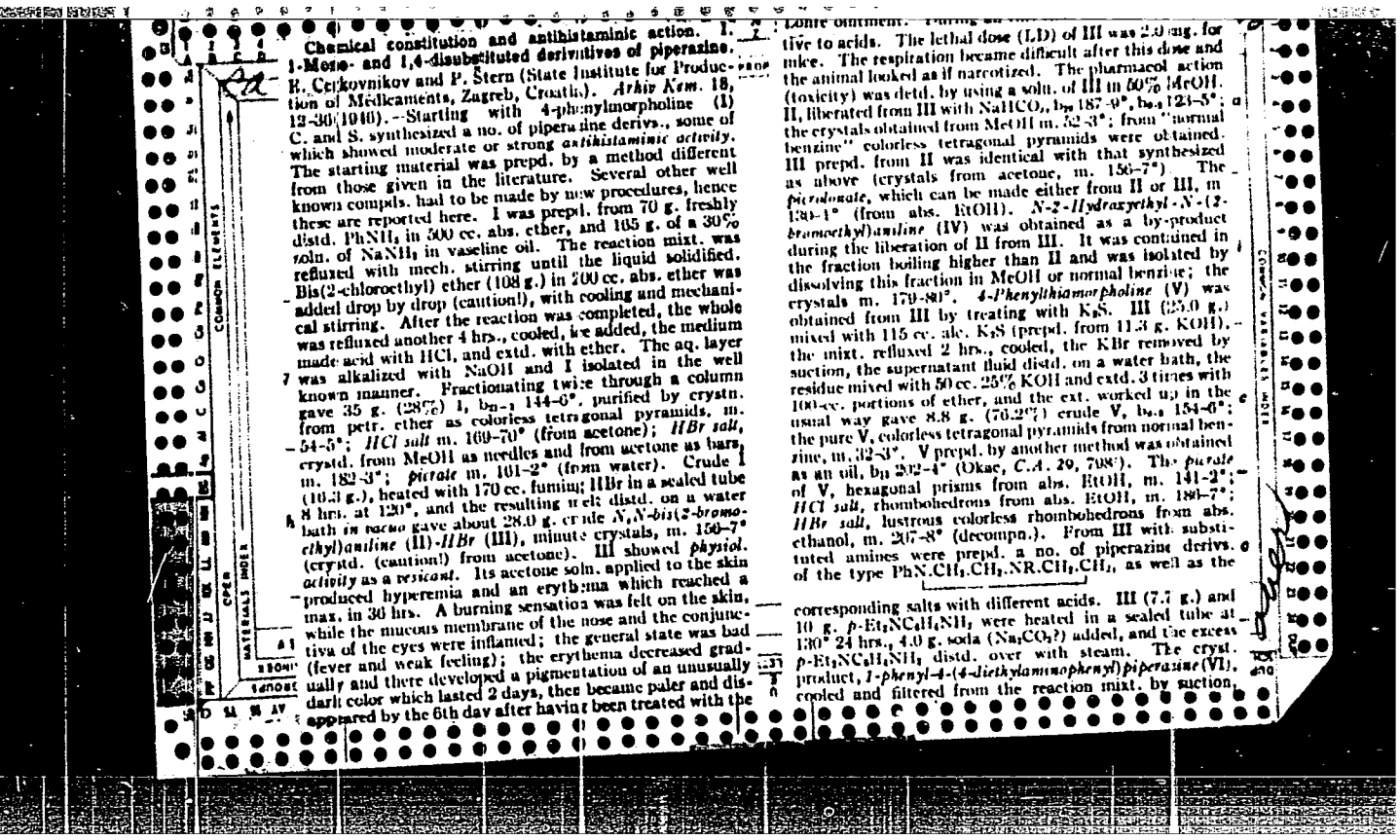
CA

Substituted bicyclo-[1,2,2]-aza-1-heptanes. V. Prelog, E. Čerkovnikov and Mlle. S. Heimbach. *Collection Czechoslov. Chem. Commun.* 10, 398–410 (1938); cf. *C. A.* 31, 3078.—Zn-Cu (17.5 g.) was treated with 17.3 g. MeI in 7.2 g. PhMe and 3.5 g. EtOAc. The liquid was decanted

and to it was added dropwise 11.57 g. *tetrahydropyran-4-carbonyl chloride* (I) in the same wt. of PhMe, the reaction being cooled with a NaCl-ice mixt. When the odor of I was no longer present, the soln. was decompd. with ice water. A small amt. of dil. H_2SO_4 was used to dissolve the ppt. formed. The soln. was extd. with Et_2O and the latter was washed successively with satd. $(NH_4)_2SO_4$, dil. H_2SO_4, $NaHCO_3$ and $Na_2S_2O_3$ solns., then dried with Na_2SO_4. Vacuum distn. gave an oil b_{18} 90–4°, identified from its *2,4-dinitrophenylhydrazone*, m. 160–0.5°, as *Me tetrahydro-4-pyranyl ketone* (II). *Et tetrahydro-4-pyranyl ketone* (III), b_{18} 103°, was similarly prepd. in 60% yield. The *2,4-dinitrophenylhydrazone* of III, from abs. alc., m. 140–6.5°. To 4.8 g. II in 50 cc. Et_2O were added 150 cc. satd. $NaHCO_3$, then with agitation, 26.5 g. Na. The evapd. Et_2O was replaced from time to time. The reduction required 25–30 hrs. The Et_2O layer was sepd. and the H_2O layer extd. with Et_2O, after which all the Et_2O solns. were dried over K_2CO_3. On distn. 3.2 g. (60% theory) *methyl(tetrahydro-4-pyranyl)carbinol* (IV) b_{18} 112–14°, was obtained. *Ethyl(tetrahydro-4-pyranyl)carbinol* (V), b_{18} 115–18°; yield, 67.5%. A 23% yield of *phenyl(tetrahydro-4-pyranyl)carbinol* (VI), $b_{0.01}$ 123–13°, was obtained from *tetrahydropyran-4-aldehyde* (VII). To MeMgBr prepd. from 6.5 g. Mg in 150 cc. abs. Et_2O was added dropwise 10.5 g. of the *Me tetrahydropyran-4-carboxylate* (VIII) and the soln. refluxed 2 hrs. HCl was added and the soln. extd. with Et_2O, and the latter then dried over K_2CO_3. The main fraction, b_{18} 118–23°, was *dimethyl(tetrahydro-4-pyranyl)carbinol* (IX). If instead of K_2CO_3, Na_2SO_4 was used to dry the Et_2O soln., some dehydration occurred, giving *4-isopropylideneletrahydropyran* (X), b_{18} 54°, with an intense terpenic odor. The same was accomplished by boiling IX with a trace of I. X (3.75 g.) and 0.1 g. platinum oxide in 10 cc. alc. were hydrogenated. The soln. was filtered and distd., giving *4-isopropyltetrahydropyran* (XI), b_{18} 67–9°, b_{760} 150–8°. It reacted with neither $KMnO_4$ nor aq. Br. *Diethyl(tetrahydro-4-pyranyl)-carbinol* (XII), prepd. similarly to IX, b. 138–43°, m. 37–8° (from petr. ether). Dehydration of XII with Na_2SO_4 gave a mixt., b. 100–38°, with 1 fraction, b. 100–4°, consisting of *4-(diethylmethylene)tetrahydropyran* (XIII). Mg (5.15 g.), 31.4 g. PhBr, 80 cc. abs. Et_2O and 7.9 g. of the *Ph ester* of VIII were caused to react in the usual manner, then refluxed 1 hr. and decompd. with dil. HCl. The Ph_2 was steam distd. and the residue, recrystd. from alc., gave *diphenyl(tetrahydro-4-pyranyl)carbinol* (XIV), m. 172–3°. Dehydration of XIV by distn. (the next day) in an Et_2O soln. satd. with HCl at 0° gave *4-(diphenylmethylene)tetrahydropyran* (XV), m. 130°. *Dibenzyl-(tetrahydro-4-pyranyl)carbinol* (XVI), m. 177–7.5°, from alc., was prepd. in the usual manner. IV (3.25 g.) was heated 3 hrs. at 100° in a sealed tube with 40 cc. 70% HBr. By the usual treatment (83.5% of *1,4-dibromo-3-(3-bromoethyl)pentane* (XVII), $b_{0.01}$ 120° was obtained.

In the same manner from **V** was obtained 73.5% of *1,4-dibromo-3-(2-bromoethyl)hexane* (**XVIII**), b$_{0.5}$ 110–5°. **VI** (1.4 g.) was heated 4 hrs. with 30 cc. 70% HBr at 100° in a sealed tube giving 38.5% of *4-bromo-2-(2-bromoethyl)-1-phenylbutene* (**XIX**), b$_{0.5}$ 160°. **IX** (3 g.) was heated 3 hrs. in the same way, giving *5-bromo-2-methyl-3-(2-bromoethyl)-2-pentene* (**XX**). To 1 g. **XX** in 25 cc. CCl_4 was added dropwise 0.7 g. Br in 25 cc. CCl_4. From petr. ether was obtained *2,3,5-tribromo-3-methyl-3-(2-bromoethyl)pentane* (**XXI**), m. 89–91°. **IX** (2 g.) in 100 cc. abs. Et_2O was satd. with dry HCl. After 2 days the soln. was distd., giving *7-chloro-4-isopropyltetrahydropyran* (**XXII**), b$_{18}$ 83–5°. **XII** (3 g.) was heated 4 hrs. at 95° with HBr in the usual way. By distn. was obtained *6-bromo-3-ethyl-(2-bromoethyl)-3-hexene* (**XXIII**), b$_{18}$ 153–5°. **XIV** gave *4-bromo-2-(2-bromoethyl)-1,1-diphenylbutene* (**XXIV**), m. 73°. **XVII** (5.33 g.) was heated 2.5 hrs. in a sealed tube at 130–40° with a 20% NH_3 soln. in MeOH. The mixt. was steam distd., then treated with $PhSO_2Cl$. The base was then acidified with HCl. The HCl deriv. of *7-methylbicyclo-[1,2,2]-aza-1-heptane* (**XXV**) was obtained on evapn.; *chloroplatinate*, from H_2O, m. 227.5°; *picrate*, from MeOH, m. 232°. From **XVIII** in the same manner as for **XXV** was obtained *7-ethylbicyclo-[1,2,2]-aza-1-heptane* b. 160°; *chloroplatinate*, from H_2O, m. 215.5°; *picrate*, from alc., m. 208.0°.

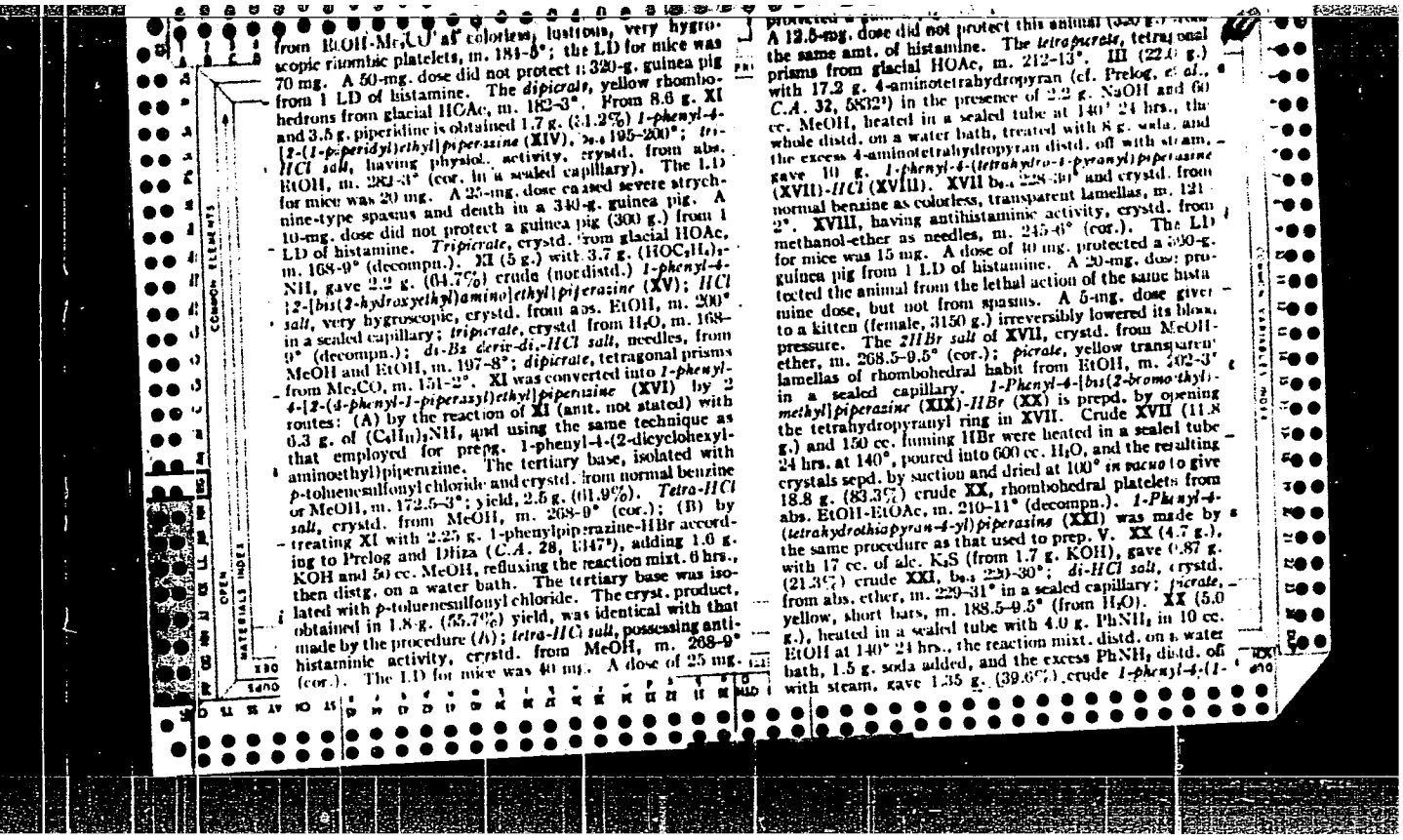
I. C. Lo Cicero



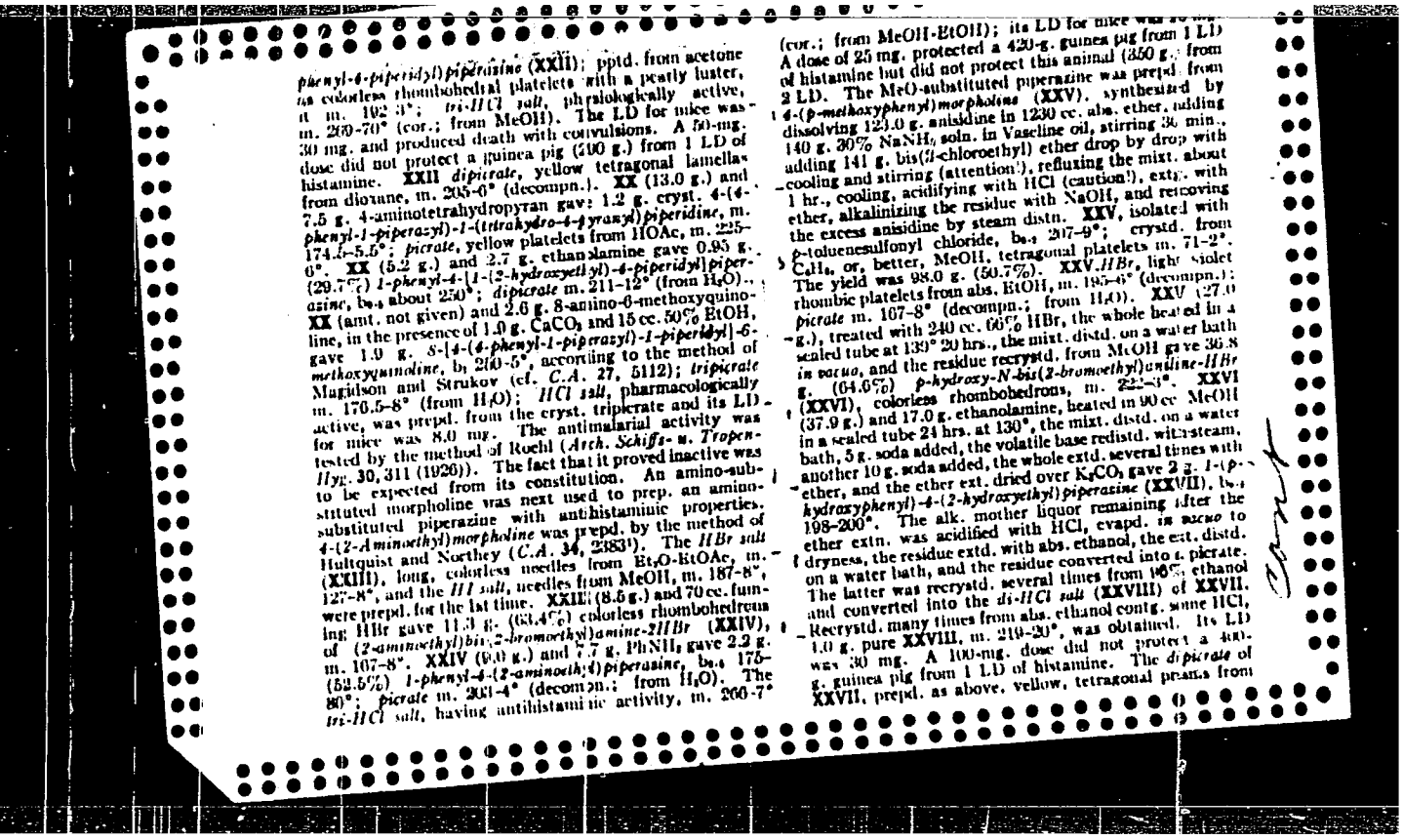
Chemical constitution and antihistaminic action. I. 1-Mono- and 1,4-disubstituted derivatives of piperazine.

R. Cerkovnikov and P. Štern (State Institute for Production of Medicaments, Zagreb, Croatia). *Arhiv Kem.* 18, 12-30(1946).—Starting with 4-phenylmorpholine (I) C. and S. synthesized a no. of piperazine derivs., some of which showed moderate or strong *antihistaminic activity*. The starting material was prepd. by a method different from those given in the literature. Several other well known compds. had to be made by new procedures, hence these are reported here. I was prepd. from 70 g. freshly distd. $PhNH_2$ in 300 cc. abs. ether, and 105 g. of a 30% soln. of $NaNH_2$ in vaseline oil. The reaction mixt. was refluxed with mech. stirring until the liquid solidified. Bis(2-chloroethyl) ether (108 g.) in 200 cc. abs. ether was added drop by drop (caution!), with cooling and mechanical stirring. After the reaction was completed, the whole was refluxed another 4 hrs., cooled, ice added, the medium made acid with HCl, and extd. with ether. The aq. layer was alkalized with NaOH and I isolated in the well known manner. Fractionating twice through a column gave 35 g. (28%) I, b_{20-1} 144–6°, purified by crystn. from petr. ether as colorless tetragonal pyramids, m. 54–5°; *HCl salt* m. 169–70° (from acetone); *HBr salt*, crystd. from MeOH as needles and from acetone as bars, m. 182–3°; *picrate* m. 191–2° (from water). Crude I (10.3 g.), heated with 170 cc. fuming HBr in a sealed tube 8 hrs. at 120°, and the resulting melt distd. on a water bath *in vacuo* gave about 28.0 g. crude *N,N-bis(2-bromoethyl)aniline* (II)-*HBr* (III), minute crystals, m. 150–7° (crystd. (caution!) from acetone). III showed *physiol. activity* as a *vesicant*. Its acetone soln. applied to the skin produced hyperemia and an erythema which reached a max. in 30 hrs. A burning sensation was felt on the skin, while the mucous membrane of the nose and the conjunctiva of the eyes were inflamed; the general state was bad (fever and weak feeling); the erythema decreased gradually and there developed a pigmentation of an unusually dark color which lasted 2 days, then became paler and disappeared by the 6th day after having been treated with the 10% ointment. During [illegible] tive to acids. The lethal dose (LD) of III was 2.0 mg. for mice. The respiration became difficult after this dose and the animal looked as if narcotized. The pharmacol action (toxicity) was detd. by using a soln. of III in 50% MeOH. II, liberated from III with $NaHCO_3$, b_{20} 187–9°, $b_{0.4}$ 123–5°; the crystals obtained from MeOH m. 52–3°; from "normal benzine" colorless tetragonal pyramids were obtained. III prepd. from II was identical with that synthesized as above (crystals from acetone, m. 156–7°). The *picrolonate*, which can be made either from II or III, m. 130–1° (from abs. EtOH). *N-2-Hydroxyethyl-N-(2-bromoethyl)aniline* (IV) was obtained as a by-product during the liberation of II from III. It was contained in the fraction boiling higher than II and was isolated by dissolving this fraction in MeOH or normal benzine; the crystals m. 179–80°. *4-Phenylthiamorpholine* (V) was obtained from III by treating with K_2S. III (25.0 g.) mixed with 115 cc. alc. K_2S (prepd. from 11.3 g. KOH), the mixt. refluxed 2 hrs., cooled, the KBr removed by suction, the supernatant fluid distd. on a water bath, the residue mixed with 50 cc. 25% KOH and extd. 3 times with 100-cc. portions of ether, and the ext. worked up in the usual way gave 8.8 g. (76.2%) crude V, $b_{0.4}$ 154–6°; the pure V, colorless tetragonal pyramids from normal benzine, m. 52–3°. V prepd. by another method was obtained as an oil, b_{11} 202–4° (Okac, *C.A.* 29, 708⁸). The *picrate* of V, hexagonal prisms from abs. EtOH, m. 141–2°; *HCl salt*, rhombohedrons from abs. EtOH, m. 186–7°; *HBr salt*, lustrous colorless rhombohedrons from abs. ethanol, m. 207–8° (decompn.). From III with substituted amines were prepd. a no. of piperazine derivs. of the type $PhN.CH_2.CH_2.NR.CH_2.CH_2$, as well as the corresponding salts with different acids. III (7.7 g.) and 10 g. *p*-$Et_2NC_6H_4NH_2$ were heated in a sealed tube at 130° 24 hrs., 4.0 g. soda (Na_2CO_3?) added, and the excess *p*-$Et_2NC_6H_4NH_2$ distd. over with steam. The cryst. product, *1-phenyl-4-(4-diethylaminophenyl)piperazine* (VI), cooled and filtered from the reaction mixt. by suction,

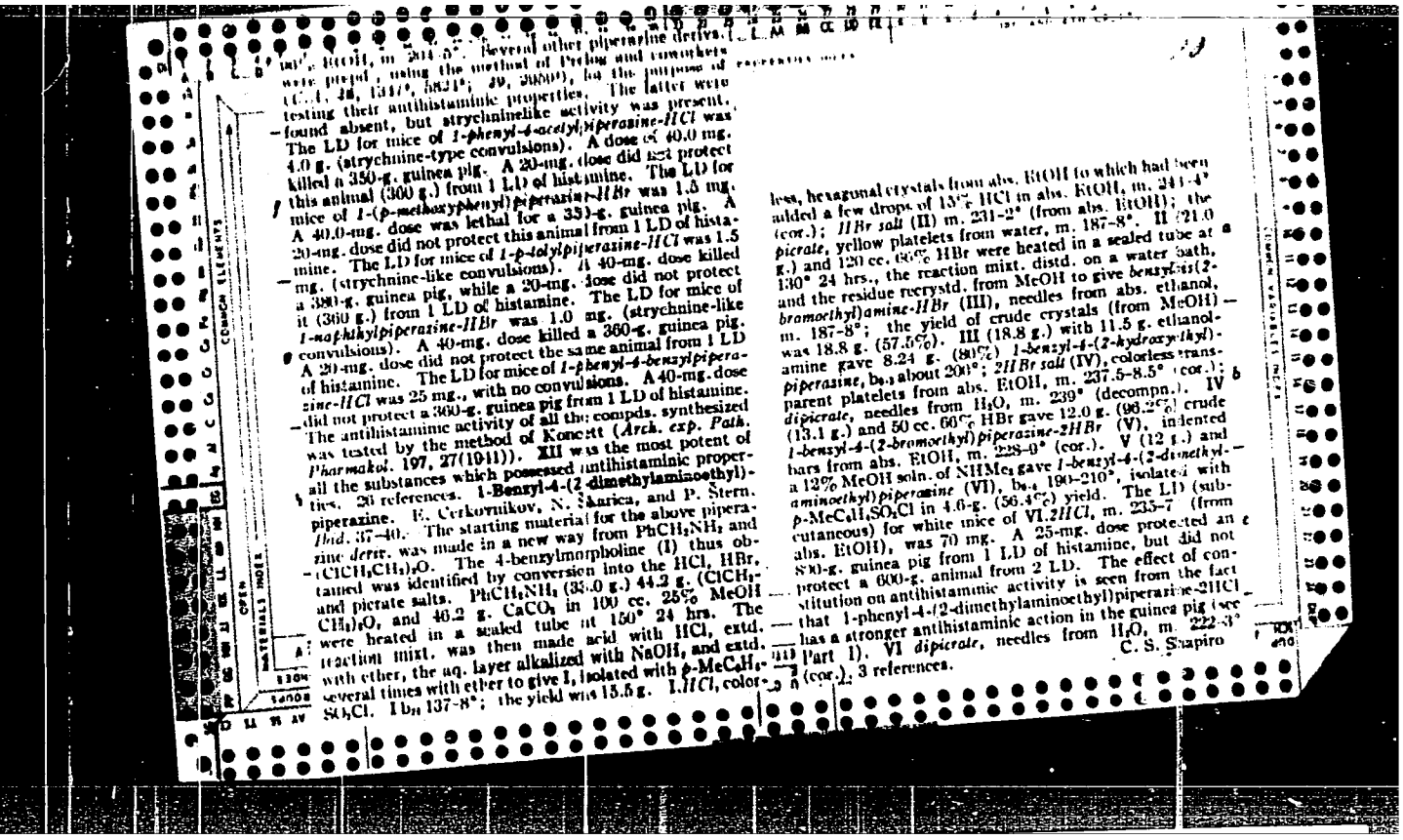
scpd. from AmOH as tetragonal pyramids, m. 135–6°, from normal benzine as colorless platelets; yield, 3.0 g. (48.9%). The *tri-HCl salt*, possessing antihistaminic activity, crystd. from MeOH-ether as hygroscopic, colorless crystals, m. 223–4°; the LD for mice was 70 mg. A dose of 50 mg. did not protect a guinea pig against 1 LD of histamine. The *tripicrate*, crystd. from AcOH as yellow rhombic platelets, m. 184–5° (decompn.). III (11.5 g.) with 11.2 g. anisidine gave 3.70 g. (47.3%) crude *1-phenyl-4-(4-methoxyphenyl)piperazine* (VII), $b_{0.4}$ 192–4°, sepd. from AmOH as colorless, lustrous, transparent platelets; recrystn. from normal benzine gave a pure compd. fit for analysis, m. 164.5–5°. VII *2HCl* possessing antihistaminic activity crystd. from MeOH as colorless, transparent, rhombic platelets, m. 215–16° (decompn., darkening began at 205°). The LD for mice was 30 mg. A dose of 50 mg. protected a guinea pig (300 g.) from 1 LD of histamine but 25 mg. did not (350-g. animal). VII (0.65 g.) and 15 cc. 68% HBr heated in a sealed tube 24 hrs. at 130°, and the reaction mixt. distd. on a water bath *in vacuo* gave nearly 100% 0.85 g. cryst. *1-phenyl-4-(p-hydroxyphenyl)piperazine-2HBr* (VIII), recrystd. from MeOH-ether as colorless bars, m. 282–3° (cor.; decompn.). The LD for mice was 25 mg. This dose protected a guinea pig (410 g.) from 1 LD of histamine, but did not protect a 310-g. guinea pig from 2 LD of histamine. III (25 g.), heated with 15.7 (units not stated) ethanolamine and 40 cc. MeOH 24 hrs. at 130°, the reaction mixt. distd. on a water bath, 15 g. soda added, and the excess $HOC_2H_4NH_2$ distd. off with steam gave *1-phenyl-4-(2-hydroxyethyl)piperazine* (IX), $b_{0.5}$ 172–5°; crystd. from normal benzine in colorless platelets, it m. 82.5–3°. The yield is 7.3 g. (43.4%) crude product. The Br deriv. (X) has antihistaminic activity. IX, obtained by the method of Prelog and Štěpán (*C.A.* 20, 4013) from 1-phenylpiperazine and diethylene oxide, m. 91°; *Br deriv.* (mono-HCl salt, m. 244°). *Di-HCl salt*, possessing antihistaminic activity, crystd. from 5% HCl soln. in abs. EtOH as colorless tetragonal platelets, m. 186.5–8°. The LD for mice was 30 mg. A dose of 50 mg. protected a 440-g. guinea pig from 1 LD of histamine, while a 25-mg. dose protected a 420-g. animal only for 30 min. The same 25-mg. dose in a young cat lowered the blood pressure, which did not return to normal. X.*2HCl*, colorless, transparent lamellas from 5% aq. HCl, m. 190–7°. The LD for mice was 60 mg. A dose of 50 mg. protected a 480-g. guinea pig from 1 LD of histamine. A 25-mg. dose protected a 500-g. guinea pig from 1 LD of histamine, but for 30 min. only. IX (3.2 g.) is heated with 20 cc. of 68% HBr in a sealed tube at 130° 8 hrs., the reaction mixt. distd. on a water bath *in vacuo*, and the residue is recrystd. from MeOH-ether to give 6.0 g. (90.8%) *1-phenyl-4-(2-bromoethyl)piperazine-2HBr* (XI), m. 239–40° (decompn.). XI (5 g.), heated with 10 cc. of a 33% MeOH soln. of $NHMe_2$ in a sealed tube 20 hrs. at 130°, gave 1.4 g. (51.8%) *1-phenyl-4-(2-dimethylaminoethyl)-piperazine* (XII), $b_{0.4}$ 228–30°; *di-HCl salt*, possessing antihistaminic activity, crystd. from abs. EtOH as colorless lamellas, m. 266–7° (cor.). The LD for mice was 15 mg. A 50-mg. dose protected a 400-g. guinea pig from 8 LD of histamine, while a 380-g. animal was temporarily protected from 16 LD of histamine (excitus by tight). A 25-mg. dose protected a 450-g. animal from 2 LD of the same substance. A 5-mg. dose lowered the blood pressure of a kitten irreversibly. A dose of 25 mg. decreased the bronchial spasm (in a 13-kg. dog) caused by histamine. A 2-mg. dose prevented a spasm of the heart ventricle following resection of the vagus in a hare (1650 g.). A 5-mg. dose given in advance prevented or at least greatly delayed a bronchial spasm produced in an atm. of histamine and lasting normally 3 min. (guinea pig, 300 g.). A 2.5-mg. dose delayed for a max. time period the spasm in the same animal (290 g.). XII *dipicrate*, transparent yellow platelets from HOAc, m. 195–6° (decompn.) (on p. 25 the picrate salt is given as the dipicrate, while on p. 14 it is given as the tripicrate). Crude XI (8.6 g.) and 4.6 g. of a 95% $NHEt_2$ soln. gave 1.9 g. (36.4%) *1-phenyl-4-(2-diethylaminoethyl)piperazine* (XIII), $b_{0.4}$ 235–6°; *di-HCl salt*, possessing antihistaminic activity, crystd.



from EtOH-Me$_2$CO as colorless, lustrous, very hygroscopic rhombic platelets, m. 184–5°; the LD for mice was 70 mg. A 50-mg. dose did not protect a 320-g. guinea pig from 1 LD of histamine. The *dipicrate*, yellow rhombohedrons from glacial HOAc, m. 182–3°. From 8.6 g. **XI** and 3.5 g. piperidine is obtained 1.7 g. (31.2%) *1-phenyl-4-[2-(1-p-peridyl)ethyl]piperazine* (**XIV**), b$_{0.4}$ 195–200°; *tri-HCl salt*, having physiol. activity, crystd. from abs. EtOH, m. 282–3° (cor. in a sealed capillary). The LD for mice was 20 mg. A 25-mg. dose caused severe strychnine-type spasms and death in a 340-g. guinea pig. A 10-mg. dose did not protect a guinea pig (300 g.) from 1 LD of histamine. *Tripicrate*, crystd. from glacial HOAc, m. 168–9° (decompn.). **XI** (5 g.) with 3.7 g. (HOC$_2$H$_4$)$_2$NH, gave 2.2 g. (64.7%) crude (not distd.) *1-phenyl-4-[2-[bis(2-hydroxyethyl)amino]ethyl]piperazine* (**XV**); *HCl salt*, very hygroscopic, crystd. from abs. EtOH, m. 200° in a sealed capillary; *tripicrate*, crystd. from H$_2$O, m. 168–9° (decompn.); *di-Bz deriv.-di.-HCl salt*, needles, from MeOH and EtOH, m. 197–8°; *dipicrate*, tetragonal prisms from Me$_2$CO, m. 151–2°. **XI** was converted into *1-phenyl-4-[2-(4-phenyl-1-piperazyl)ethyl]piperazine* (**XVI**) by 2 routes: (A) by the reaction of **XI** (amt. not stated) with 6.3 g. of (C$_6$H$_{11}$)$_2$NH, and using the same technique as that employed for prepg. 1-phenyl-4-(2-dicyclohexylaminoethyl)piperazine. The tertiary base, isolated with *p*-toluenesulfonyl chloride and crystd. from normal benzine or MeOH, m. 172.5–3°; yield, 2.5 g. (61.9%). *Tetra-HCl salt*, crystd. from MeOH, m. 268–9° (cor.); (B) by treating **XI** with 2.25 g. 1-phenylpiperazine-HBr according to Prelog and Driza (*C.A.* 28, 1347°), adding 1.0 g. KOH and 50 cc. MeOH, refluxing the reaction mixt. 6 hrs., then distg. on a water bath. The tertiary base was isolated with *p*-toluenesulfonyl chloride. The cryst. product, obtained in 1.8 g. (55.7%) yield, was identical with that made by the procedure (A); *tetra-HCl salt*, possessing antihistaminic activity, crystd. from MeOH, m. 268–9° (cor.). The LD for mice was 40 mg. A dose of 25 mg. [illegible] A 12.5-mg. dose did not protect this animal (330 g.) from the same amt. of histamine. The *tetrapicrate*, tetragonal prisms from glacial HOAc, m. 212–13°. **III** (22.0 g.) with 17.2 g. 4-aminotetrahydropyran (cf. Prelog, *et al.*, *C.A.* 32, 5832°) in the presence of 2.2 g. NaOH and 60 cc. MeOH, heated in a sealed tube at 140° 24 hrs., the whole distd. on a water bath, treated with 8 g. soda, and the excess 4-aminotetrahydropyran distd. off with steam, gave 10 g. *1-phenyl-4-(tetrahydro-4-pyranyl)piperazine* (**XVII**)-*HCl* (**XVIII**). **XVII** b$_{0.4}$ 228–30° and crystd. from normal benzine as colorless, transparent lamellas, m. 121–2°. **XVIII**, having antihistaminic activity, crystd. from methanol-ether as needles, m. 245–6° (cor.). The LD for mice was 15 mg. A dose of 10 mg. protected a 300-g. guinea pig from 1 LD of histamine. A 20-mg. dose protected the animal from the lethal action of the same histamine dose, but not from spasms. A 5-mg. dose given to a kitten (female, 3150 g.) irreversibly lowered its blood pressure. The *2HBr salt* of **XVII**, crystd. from MeOH-ether, m. 268.5–9.5° (cor.); *picrate*, yellow transparent lamellas of rhombohedral habit from EtOH, m. 202–3° in a sealed capillary. *1-Phenyl-4-[bis(2-bromoethyl)-methyl]piperazine* (**XIX**)-*HBr* (**XX**) is prepd. by opening the tetrahydropyranyl ring in **XVII**. Crude **XVII** (11.8 g.) and 150 cc. fuming HBr were heated in a sealed tube 24 hrs. at 140°, poured into 600 cc. H$_2$O, and the resulting crystals sepd. by suction and dried at 100° *in vacuo* to give 18.8 g. (83.3%) crude **XX**, rhombohedral platelets from abs. EtOH-EtOAc, m. 210–11° (decompn.). *1-Phenyl-4-(tetrahydrothiopyran-4-yl)piperazine* (**XXI**) was made by the same procedure as that used to prep. V. **XX** (4.7 g.), with 17 cc. of alc. K$_2$S (from 1.7 g. KOH), gave 0.87 g. (21.3%) crude **XXI**, b$_{0.4}$ 220–30°; *di-HCl salt*, crystd. from abs. ether, m. 229–31° in a sealed capillary; *picrate*, yellow, short bars, m. 188.5–9.5° (from H$_2$O). **XX** (5.0 g.), heated in a sealed tube with 4.0 g. PhNH$_2$ in 10 cc. EtOH at 140° 24 hrs., the reaction mixt. distd. on a water bath, 1.5 g. soda added, and the excess PhNH$_2$ distd. off with steam, gave 1.35 g. (39.6%) crude *1-phenyl-4-(1-*



phenyl-4-piperidyl)piperazine (**XXII**); pptd. from acetone as colorless rhombohedral platelets with a pearly luster, m. 192.5°; *tri-HCl salt*, physiologically active, m. 260–70° (cor.; from MeOH). The LD for mice was 30 mg. and produced death with convulsions. A 50-mg. dose did not protect a guinea pig (500 g.) from 1 LD of histamine. **XXII** *dipicrate*, yellow tetragonal lamellas from dioxane, m. 205–6° (decompn.). **XX** (13.0 g.) and 7.5 g. 4-aminotetrahydropyran gave 1.2 g. cryst. *4-(4-phenyl-1-piperazyl)-1-(tetrahydro-4-pyranyl)piperidine*, m. 174.5–5.5°; *picrate*, yellow platelets from HOAc, m. 225–6°. **XX** (5.2 g.) and 2.7 g. ethanolamine gave 0.95 g. (29.7%) *1-phenyl-4-[1-(2-hydroxyethyl)-4-piperidyl]piperazine*, b$_{4}$ about 250°; *dipicrate* m. 211–12° (from H$_2$O). **XX** (amt. not given) and 2.6 g. 8-amino-6-methoxyquinoline, in the presence of 1.0 g. $CaCO_3$ and 15 cc. 50% EtOH, gave 1.9 g. *8-[4-(4-phenyl-1-piperazyl)-1-piperidyl]-6-methoxyquinoline*, b$_{1}$ 260–5°, according to the method of Magidson and Strukov (cf. *C.A.* 27, 5112); *tripicrate* m. 176.5–8° (from H$_2$O); *HCl salt*, pharmacologically active, was prepd. from the cryst. tripicrate and its LD for mice was 8.0 mg. The antimalarial activity was tested by the method of Roehl (*Arch. Schiffs- u. Tropen-Hyg.* 30, 311 (1926)). The fact that it proved inactive was to be expected from its constitution. An amino-substituted morpholine was next used to prep. an amino-substituted piperazine with antihistaminic properties. *4-(2-Aminoethyl)morpholine* was prepd. by the method of Hultquist and Northey (*C.A.* 34, 2383^{1}). The *HBr salt* (**XXIII**), long, colorless needles from MeOH, m. 187–8°, 127–8°, and the *HI salt*, needles from MeOH, m. 187–8°, were prepd. for the 1st time. **XXIII** (8.5 g.) and 70 cc. fuming HBr gave 11.3 g. (63.4%) colorless rhombohedrons of *(2-aminoethyl)bis(2-bromoethyl)amine-2HBr* (**XXIV**), m. 107–8°. **XXIV** (9.0 g.) and 7.7 g. PhNH$_2$ gave 2.2 g. (52.5%) *1-phenyl-4-(2-aminoethyl)piperazine*, b$_{4}$ 175–80°; *picrate* m. 203–4° (decompn.; from H$_2$O). The *tri-HCl salt*, having antihistaminic activity, m. 260–7° (cor.; from MeOH-EtOH); its LD for mice was [illegible]. A dose of 25 mg. protected a 420-g. guinea pig from 1 LD of histamine but did not protect this animal (350 g.) from 2 LD. The MeO-substituted piperazine was prepd. from *4-(p-methoxyphenyl)morpholine* (**XXV**), synthesized by dissolving 123.0 g. anisidine in 1230 cc. abs. ether, adding 140 g. 30% $NaNH_2$ soln. in Vaseline oil, stirring 30 min., adding 141 g. bis(2-chloroethyl) ether drop by drop with cooling and stirring (attention!), refluxing the mixt. about 1 hr., cooling, acidifying with HCl (caution!), extg. with ether, alkalinizing the residue with NaOH, and removing the excess anisidine by steam distn. **XXV**, isolated with *p*-toluenesulfonyl chloride, b$_{4}$ 207–9°; crystd. from C_6H_6, or, better, MeOH, tetragonal platelets m. 71–2°. The yield was 98.0 g. (50.7%). **XXV**.*HBr*, light violet rhombic platelets from abs. EtOH, m. 195–6° (decompn.); *picrate* m. 167–8° (decompn.; from H$_2$O). **XXV** (27.0 g.), treated with 240 cc. 66% HBr, the whole heated in a sealed tube at 139° 20 hrs., the mixt. distd. on a water bath *in vacuo*, and the residue recrystd. from MeOH gave 36.8 g. (64.6%) *p-hydroxy-N-bis(2-bromoethyl)aniline-HBr* (**XXVI**), colorless rhombohedrons, m. 222–3°. **XXVI** (37.9 g.) and 17.0 g. ethanolamine, heated in 90 cc. MeOH in a sealed tube 24 hrs. at 130°, the mixt. distd. on a water bath, 5 g. soda added, the volatile base redistd. with steam, another 10 g. soda added, the whole extd. several times with ether, and the ether ext. dried over K_2CO_3 gave 2 g. *1-(p-hydroxyphenyl)-4-(2-hydroxyethyl)piperazine* (**XXVII**), b$_{4}$ 198–200°. The alk. mother liquor remaining after the ether extn. was acidified with HCl, evapd. *in vacuo* to dryness, the residue extd. with abs. ethanol, the ext. distd. on a water bath, and the residue converted into a picrate. The latter was recrystd. several times from 96% ethanol and converted into the *di-HCl salt* (**XXVIII**) of **XXVII**. Recrystd. many times from abs. ethanol contg. some HCl, 1.0 g. pure **XXVIII**, m. 210–20°, was obtained. Its LD was 30 mg. A 100-mg. dose did not protect a 400-g. guinea pig from 1 LD of histamine. The *dipicrate* of **XXVII**, prepd. as above, yellow, tetragonal prisms from



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Chemical composition and antihistaminic action; 3d report. Some heterocyclic derivatives of N (-dimethylaminoalkyls). p. 87, Arhiv Za Kemiju, Vol. 18, nos. 1-4, 1946.

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CERKOVNIKOV, E.

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Yugo.

Preparation of ditertiary glycols from the esters of γ-keto carboxylic acids. K. Cerkovnikov, M. Drakulić, F. Rinenfeld, and M. R[illegible] [illegible]. *Jugoslav.* 2, 137-?(1952)(English summary). From $RCO(CH_2)_2CO_2Et$ prepd. by the method of Chichibabin (*Compt. rend. IIe congr. chim. ind.*, 1931) and the corresponding alkyl magnesium halides were prepd. the following ditertiary γ-glycols (% yield and m.p. given): 3,6-diethyl-3,6-nonanediol, 75, (b. 140°), 83-3.5°; 4,7-dipropyl-4,7-decanediol, 65, 86-6.5°; 5-propyl-8-butyl-5,8-dodecane-5,8-diol, 92, 88-8.5°. From $EtCO(CH_2)_2CO_2Et$ and the corresponding Grignard reagent was synthesized 3,6-diethyl-3,6-octanediol, b. 115-120°, m. 64-5°; yield 31.8%. 11 references. V. Mihajlov

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CERKOVNIKOV E.

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YUGOSLAVIA/General Problems of Pathology - Tumors.

Abs Jour : Ref Zhur - Biol., No 3, 1958, 12717

Author : Cerkovnikov, E., Misirlije, A., Muacevic, G., Stern, P.

Inst : Not given. Fac. Med., Sarajevo, Yugoslavia

Title : Chemical Structure and Antileukemic Activity. IV. N-phenylurethans of Certain Aminoalcohols.

Orig Pub : Acta pharmac. jugoslav., 1955, 5, No 1, 43-50

Abstract : A study was made of ability to cause leukopenia, toxicity, allergic reactions and to influence the blood pressure of the N-phenylurethanhydrochlorides of the following amino-alcohols:
(I) dimethylaminoethanol;
(II) dimethylaminopropanol;
(III) diethylaminopropanol;
(IV) diethylaminoethanol;

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Abs Jour : Ref Zhur - Biol., No 3, 1958, 12717

(V) diethylaminopropanol.
The ability to cause leukopenia was studied on roosters that were twice given I.M. 0.5 ml. of a 0.25% solution of maretin (1-m-tolylsemicarbazide), a substance causing leucocytosis, with a 7-day interval between injections. Later, 0.1 ml. of a 0.25% aqueous solution of the experimental compounds was injected I.M. for 14 days. White counts were done before the experiment, after the injection of meritin, on the 8th and 14th days of treatment and after 11-12 and 25-30 days following the termination of therapy. The toxicity of the substances was determined with mice. Effects on blood pressure were studied on cats under chlorolose narcosis, and the antiallergic action was studied on guinea pigs sensitized with egg albumin. All compounds studied caused leukopenia. N-phenylurethans of the alcohols with the diethylamine radical were more efficacious than the corresponding urethans of the alcohols containing

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000308020014-3"

Abs Jour : Ref Zhur - Biol., No 3, 1958, 12717

a diethylamine radical. N-phenylurethans of the primary aminoalcohols were more active than corresponding N-phenylurethans of the secondary alcohols. Under the influence of (I) and (II) leukocyte counts returned to normal; thus, these substances had an effect similar to urethan. All experimental substances were more toxic than urethan (mouse LD for urethan is 15-20 mg./20 g. of body weight, whereas tje LD for N-phenylurethans is 3-10 mg./20 g.). Ten milligrams of any of these substances briefly depressed the blood pressure by 20-30 mm. Hg. (I), (II), (IV) and (V) prevented asthmatic episodes in guinea pigs sensitized with egg albumin and inhaling a homogogous antigen. A glossary of 10 terms follows.

CERKOVNIKOV, E.

Aleksel Evegen'evich Chichibabin, 1871-1945; on the tenth anniversary of his death. (Supplement) P. A33, Vol 27, no. 2, 1955

SOURCE: East European Accessions List (EEAL), LC, Vol. 5, No. 2, Feb. 1956

CERKOVNIKOV, E.

G-2

YUGOSLAVIA/Organic Chemistry. Synthetic Organic Chemistry.

Abs Jour: Ref Zhur-Khim , No 13, 1958, 43348.

Author : Kolbah Dragutin, Rill Margita, Cerkovnikov Eugen.
Inst :
Title : 4-(Beta-Dimethylamino-Ethyl)-Tetrahydropyran.

Orig Pub: Acta pharmac. jugosl., 1956, 6, No 2, 65-67.

Abstract: By the action of PBr_3 on 4-(beta-hydroxy-ethyl)-tetrahydropyran in the presence of C_5H_5N (48 hours, about 20°) was obtained 4-(beta-bromethyl)-tetrahydropyran, yield 77%, BP 102°/13 mm, by the heating of which (16 hours, 130°) with NH $(CH_3)_2$ in absolute alcohol was synthesized 4-(beta-dimethylamino-ethyl)-tetrahydropyran, yield 77%, BP 80-82°/12 mm, which on boiling with a

Card : 1/2

YUGOSLAVIA/Organic Chemistry. Synthetic Organic Chemistry. G-2

Abs Jour: Ref Zhur-Khim., No 13, 1958, 43348.

solution of HBr in CH_3COOH is converted to the hydrobromide of 3-(beta-dimethylamino-ethyl)-1,5-dibromopetane, yield 90.6%, MP 104-105° (from absolute alcohol).

Card : 2/2

CERKOVNIKOV, E.

Chemical constitution of organic compounds and their biological activity. I. *p*-(Carbethoxymethoxy)benzenesulfonamide. E. Cerkovnikov and B. Stavrić (Inst. Org. Chem. Fac. Pharmacy, Zagreb). *Acta Pharm. Jugoslav.* 6, 89–93(1956).—*p*-(Carbethoxymethoxy)benzenesulfonamide (I) was prepd. by condensation of Na *p*-aminosulfonylphenoxide with Et bromoacetate by heating the mixt. for 5 hrs. at 120°, m.p. 144° (uncor.), water-alc. crystn., yield 22%. I contains in its mol. two biologically active groups: $C_6H_4SO_2NH_2$ with bactericidal and bacteriostatic activities and OCH_2COOEt with phytohormone activity. Preliminary examns. were carried out with the Na salt of I on the above mentioned activities. I had some bacteriostatic, bactericidal and phytohormone activities as well as fungicide-like activity. T. Mican-Filter

2

STAVRIC, B.; CERKOVNIKOV, B.

Preparation of some derivatives of p-hydroxybenzenesulfonamides. I. Some N-alkyl derivatives of p-(carvoxymethoxy) benzenesulfonamides. In English. Croat.chem.acta 31 no.3:107-114 '59. (KRAI 9:4)

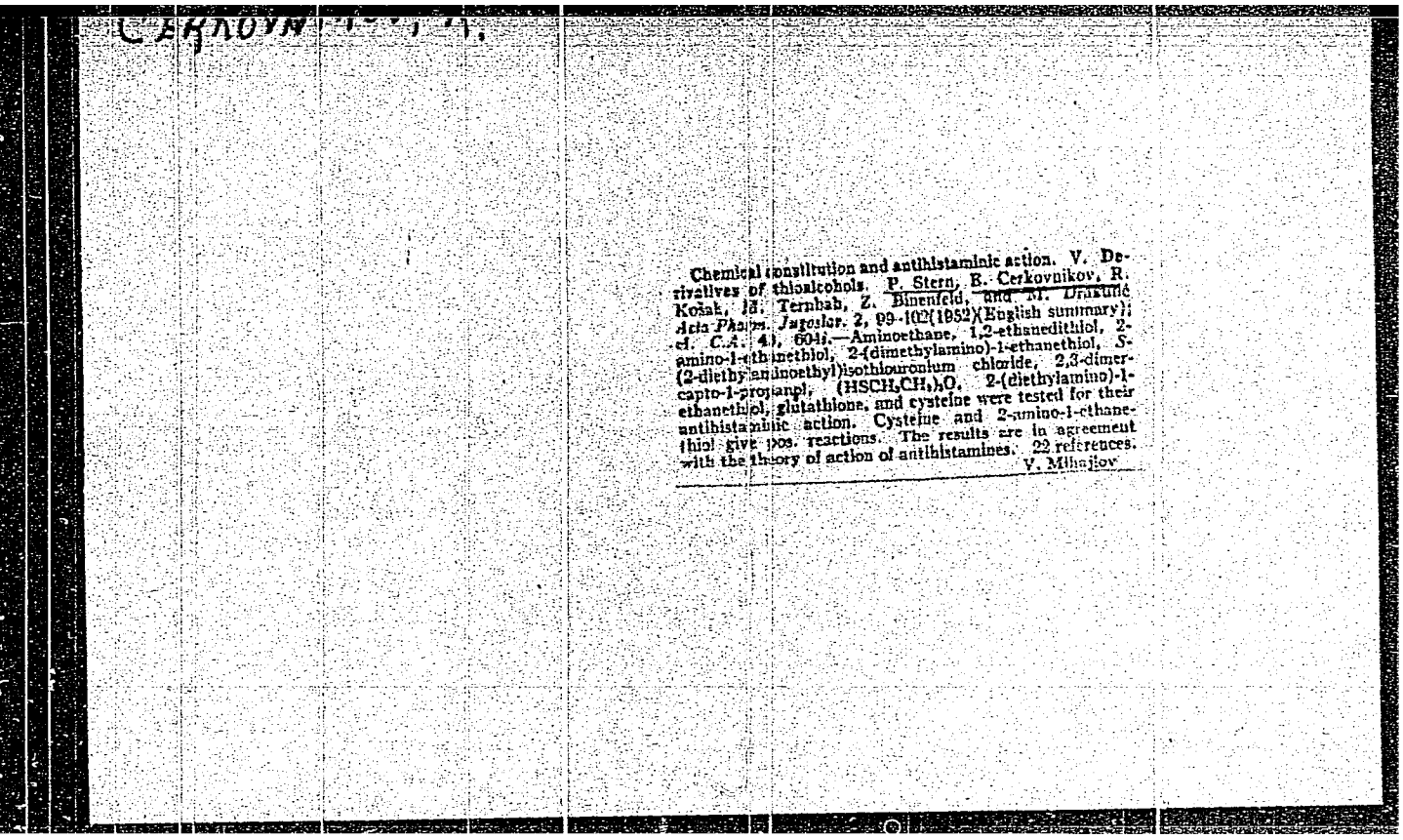
1. Institute of Organic Chemistry, Faculty of Pharmacy, University of Zagreb, Zagreb, Croatia, Yugoslavia. 2. Present adress: Institue of Chemistry and Biochemistry, Faculty of Medicine, University of Zagreb, Rijeka, Croatia, Yugoslavia (for Cerkovnikov).
(Carboxyl group) (Methoxybenzenesulfonamide) (Phepolsulfonamide)
(Alkyl groups)

STAVRIC, B.; CERKOVNIKOV, E.

Preparation of some derivatives of p-hydroxybenzenesulphonamides. II. Some N-heterocyclic and other derivatives of p-carboxymethoxybenzenesulphonamide. Croat chem acta 32 no.4:203-207 '60. (EEAI 10:9)

1. Institute of Organic Chemistry, Faculty of Pharmacy, University of Zabreb, Croatia, Yugoslavia.

(Acetic acid) (Benzenosulfonamides)
(Diazotization)

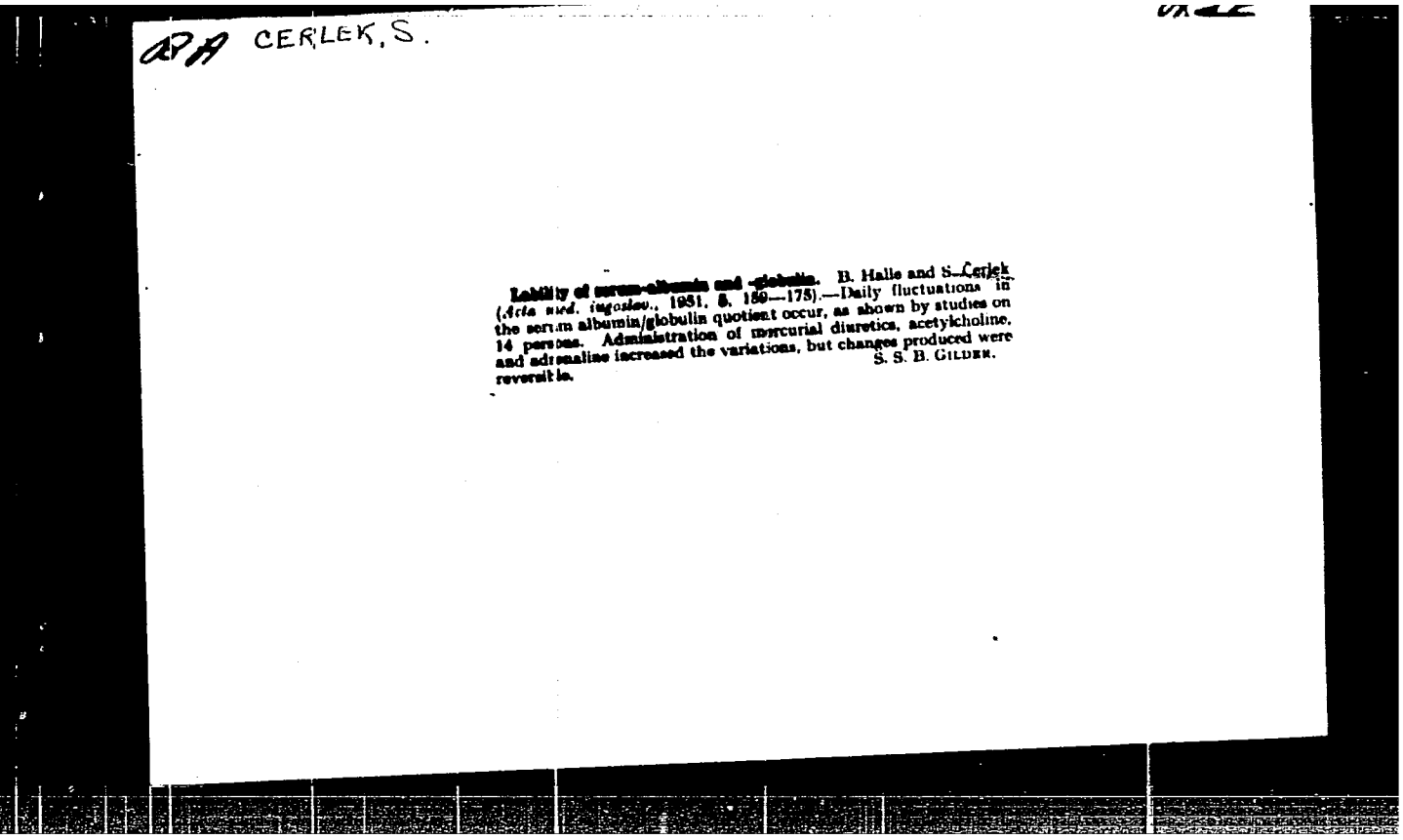


Chemical constitution and antihistaminic action. V. Derivatives of thioalcohols. P. Stern, B. Cerkovnikov, R. Košak, M. Ternbah, Z. Binenfeld, and M. Drakulić (*Acta Pharm. Jugoslav.* 2, 99-102(1952)(English summary); cf. *C.A.* 46, 6044i.—Aminoethane, 1,2-ethanedithiol, 2-amino-1-ethanethiol, 2-(dimethylamino)-1-ethanethiol, *S*-(2-diethylaminoethyl)isothiouronium chloride, 2,3-dimercapto-1-propanol, $(HSCH_2CH_2)_2O$, 2-(diethylamino)-1-ethanethiol, glutathione, and cysteine were tested for their antihistaminic action. Cysteine and 2-amino-1-ethanethiol give pos. reactions. The results are in agreement with the theory of action of antihistamines. 22 references. V. Mihajlov

LUKETIC,Gorazd,dr.; CERLEK,Nenad,dr.; KULCAR,Zivko,dr.

Blood groups and gastrointestinal diseases. Lijec. vjes. 81 no.11:827-830 '59.

1. Iz Internog i Kirurskog odjela Opce bolnice "Dra. M. Stojanovica" i iz Centralnog Higijenskog zavoda u Zagrebu.
(GASTROINTESTINAL DISEASES blood)
(BLOOD GROUPS)



ADA CERLEK, S.

Lability of serum-albumin and -globulin. B. Halle and S. Cerlek (*Acta med. iugoslav.*, 1951, 5, 169—175).—Daily fluctuations in the serum albumin/globulin quotient occur, as shown by studies on 14 persons. Administration of mercurial diuretics, acetylcholine, and adrenaline increased the variations, but changes produced were reversible.

S. S. B. GILDER.

CERLEK, S.

HAHN, A., dr.; LAINOVIC, C., dr.; CERLEK, S., dr.

Atypical pictures of amebiasis. Lijec. vjes. 76 no.3-4:128-137 Mar-Apr 54.

1. Iz Interne klinike Medicinskog fakulteta Sveucilista u Zagrebu.
(AMEBIASIS, pathol.)

CERLEK, S.

KALLAI, L., dr.; CERLEK, S., dr.; BARTOLOVIC, D., dr.

Clinical aspects of peripapillary carcinoma of duodenum. Lijec. vjes. 76 no.7-8:289-297 July-Aug 54.

1. Iz interne klinike Medicinskog fakulteta Sveucilista, Zagreb.
(DUODENUM, neoplasms
peripapillary carcinoma)

CERLEK, S., Dr.; KALLAI, L. Dr

Anicteric forms in hepatitis epidemics. Lijec.vjes. 77 no.3-4:161-167 Mar-Apr '55.

1. Iz Interne klinike Medicinskog fakulteta u Zagrebu.
(HEPATITIS, epidemiol.
anicteric hepatitis, incidence & diag.(Ser))

PERSIC, N.; KALLAI, L.; CERLEK, S.

Histological changes in liver in schizophrenia. Acta med. iugosl. 10 no.3:387-398 1956.

1. Neurolosko-psihijatrijska klinika i Interna klinika Medicinskog fakulteta u Zagrebu.
(SCHIZOPHRENIA, pathol.
liver (Ser))
(LIVER, pathol.
in schizophrenia (Ser))

FORENBACHER, S.; CERLEK, S.; MARZAN, B.

The effect of protracted application of alcohol upon the liver of horses. Acta med. iugoslavl. 15 no.1:80-94 '61.

1. Department of Medicine, Medical Faculty, and Institute for Pathology and Therapy, Faculty of Veterinary Medicine, University of Zagreb.
(ALCOHOLISM exper) (LIVER pathol)

7 The Dynamics of Feeding Devices for Pilger Rolls. A. Cermák. (*Hutnické Listy*, 1957, 12, (2), 110-125). [In Czech]. A mathematical analysis of optimum design characteristics is given.—P. T.

aaz
8

L 34230-66

ACC NR: AP6026074 SOURCE CODE: CZ/0034/65/000/012/0906/0906

INVENTOR: Smatny, Z. (Doctor; Engineer); Staron, J. (Engineer); Cermak, A. (Engineer)

ORG: none

TITLE: Basic refractory bricks. Class 18b, No PV 7005-64

SOURCE: Hutnicke listy, no. 12, 1965, 906

TOPIC TAGS: refractory product, metal coating

ABSTRACT: The article is an abstract of Authors' Patent Application No Class 18b, 5/10, PV 7005-64, dated 12 Dec 64. The invention describes shapes formed from a refractory material covered by metal that is oxidizable, and is in contact with all surfaces of the material which it is protecting. The metal is in two sections and designed so that two parts of it always overlap giving a double metal layer on a brick surface. The metal covers are connected by parts that are folded over each other and located as a diagonal line across one side of the brick. [JPRS: 34,272]

SUB CODE: 11, 13 / SUBM DATE: none

HORA, Oldrich, inz.; ZAK, Karel, inz.; CERMAK, Alexander, inz.

Research on grain separators. Zemedel tech 9 no. 4:317-334 Ag '63.

1. Vyzkumny ustav zemedelskych stroju, Chodov u Prahy.

HORA, Oldrich, inz.; CERMAK, Alexandr, inz.; GREGOR, Miroslav

Raising the effectiveness of harvester-threshers.
Zemedel tech 10 no. 3:151-164 Mr '64.

1. Research Institute of Agricultural Machinery, Chodov near Prague. Director of the Institute: inz. Jaroslav Homolka.

L 62760-65

ACCESSION NR: AP5021463 CZ/0034/64/000/011/0833/0833

AUTHOR: Cermak, A. (Engineer)

TITLE: Production of electrically melted magnesite

SOURCE: Hutnicke listy, no. 11, 1964, 833

TOPIC TAGS: arc furnace, metal melting, magnesite, magnetic separation

Abstract: Melting in an electric arc furnace yields a bloc containing the recrystallized product coated with an agglomerated layer of the original charge. The invention covers the separation of the product from the outer layer. The magnesite charge contains a min. of 5% of Fe_2O_3 and 2.5 to 6% of CrO and SiO_2. A magnetic separation of the product is then possible. The article describes Czechoslovak Patent Application Class 18b, 5/10, PV 1814-63, dated 1st.

ASSOCIATION: none

SUBMITTED: 01Apr64 ENCL: 00 SUB CODE: MM, EM

NO REF SOV: 000 OTHER: 000 JPRS

Card 1/1

L 43616-66 EWP(k)/EWP(h)/EWP(v)/EWP(l) BC

ACC NR: AP6017909 (A) SOURCE CODE: CZ/0078/65/000/012/0025/0026

INVENTOR: Znamek, Miroslav (engineer) (Prague); Michalik, Slavomir (engineer) (Prague); Cermak, Antonin (engineer, Candidate of Sciences) (Prague)

60 B

ORG: none

TITLE: (Transducer for the long-range measurement of position) CZ Pat. No. PV 3481-65, Class 74 b

SOURCE: Vynalezy, no. 12, 1965, 26

TOPIC TAGS: measuring instrument, remote control, detection system

ABSTRACT: A transducer for the long-range measurement of position, in particular of liquid level, is described which has the distinguishing feature that it consists of at least one coil wound so that winding lengths are in ascending order, and of an axially movable member positioned freely inside the coil and controlled by coil inductance.

14

SUB CODE: 09,14/ 28May65

Card 1/1 Zgm

CERNAF, B.

"Problems of the impregnation of tar cardboard."

PAPIR A CELULOSA. Praha, Czechoslovakia. Vol. 10, no. 8, Aug. 1955.

Monthly list of East European Accessions (EEAI), LC, Vol. 9, No. 6, Jun 59, Unclas

BLECHTA, V.; LAVICKA, M.; CERMAK, B.

Laboratory furnace for following the kinetics of calcination processes. Chem prum 14 no.5:263-265 My '64.

1. Research Institute of Inorganic Chemistry, Usti nad Labem.

CERMAK, E.

"Speeding up the construction of water-power works by a correct selection of the sequence of processes for assembling steel structures and machines." p. 132.

STAVBA. (Poverenictvo stavebnictva). Bratislava, Czechoslovakia, Vol. 6, No. 5, May 1959.

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 8, August 1959.
Uncla.

CERMAK, Fedor, inz.

Use of aluminum in the manufacture of large electric rotation machines in the "Bratislavske elektrotechnicke zavody" in Bratislava. El tech obzor 51 no.9:494-498 S '62.

1. Bratislavske elektrotechnicke zavody, n.p., Bratislava.

GERMAK, Frantisek, Prof. ing. arch.

Project studies of the students of the department of architecture and building of CVUT in Praha. Cesk. nemoc. 22 no.5:94-114 22 Sept 54.

1. Fakulta architektury a pozemn. stavitelstvi, Praha, ustav architectury staveb zdravotnickych.
(HOSPITALS
building projects of students of technol. university, Praha)

KOUBA,K.; CERMAK,J.; JIRA,J.; BOZDECH, V.

Apropos of the relation between infectious mononucleosis and toxoplasmosis. Cas. lek. cesk. 104 no.4:96-98 29 Ja '65

1. Infekcni klinika nemocnice na Bulovce (prednosta prof. dr. J. Prochazka, DrSc) ; Protozoologicke oddeleni Parazitologickeho ustavu Ceskoslovenskej akademie ved (reditel: prof. dr. B. Rosicky, DrSc.) a Parazitologicke oddeleni Zoologickeho ustavu prirodovedecke fakulty Karlovy University v Praze (reditel akademik O. Jirovec).

CERMAK, J.

TECHNOLOGY

periodicals: POZEMNI STAVBY Vol. 7, no. 2, Feb. 1959

CERMAK, J. Protection of masonry, plaster, and concrete against rain and moisture. p. 83.

Monthly List of East European Accessions (EEAI) LC Vol. 8, no. 5 May 1959, Unclass.

CERNAK, J.; LEDVINA, M.

The use of arsenic compounds for wood preservation. p. 113. (DREVARSKY VYSKUM, Vol. 1, No. 1/2, Oct 1956, Bratislava, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 12, Dec 1957. Uncl.

DOSTAL, P.; CERMAK, J.; NOVOTNA, B.

Determination of silicon fixed alkoxy and aroxyl groups in organosilicon compounds. Coll Cz Chem 30 no.1:34-39 Ja '65.

1. Forschungsinstitut fur organische Synthesen, Pardubice-Rybitvi. Submitted November 9, 1963.

CERMAK, J.

Building up of scientific geography at Charles University of Prague. p. 8. SBORNIK. Praha. (Journal issued by the Czechoslovak Geographical Society; With English and Russian summaries. Quarterly.) Vol. 60, No. 1, 1955

SOURCE: East European Accessions List (EEAL), Library of Congress Vol. 4, no. 12, December 1955

CERMAK, Jaroslav

After the 1st Congress of the Czechoslovak Scientific Technical Society.
Energetika Cz 11 no.10:477-478 O '61.

CERMAK, Jiri, inz., C.Sc.; ZAVORKA, Jiri, inz., C.Sc.

Use of digital computers for calculating the efficiency of the block boiler-turbine. Automatizace 12 no.5:221-222 8 Ag '62.

1. Ustav teorie informace a automatizace, Ceskoslovenska akademie ved, Praha.

[redacted], J.

Chromatic focusing of X-ray diffraction lines and achromatic camera. Chekhosl fiz zhurnal 14 no.8:629-645 '64

Graphic solution of chromatic and geometric focusing of X-ray diffraction lines. Ibid.:646-657

1. Institute of Solid State Physics, Czechoslovak Academy of Sciences, Prague 5, Cukrovarnicka 10.

GERMAK, Jaroslav, inz.

Czechoslovak Scientific and Technological Society at the 6th Brno International Fair. Tech praca 16 no.9:643-647 S '64

International conference of technical periodical editors. Tech praca 16 no.9:661-662 S '64

1. Deputy Organization Secretary of the Central Council of the Czechoslovak Scientific and Technological Society.

CERMAK, J.

Effect of the field's slope on tractor plowing. p. 463.

MECHANISACE ZEMEDELSTVI. Praha. Vol. 4, no. 24, Dec. 1954.

SOURCE: East European Accessions List (EEAL), LC, Vol. 5, no. 3, March 1956

CERMAK, J.

Favorable effect of tractor tracks on spring crops. p. 65.
MECHANISACE ZEMEDELSTVI, Praha, Vol. 5, no. 4, Feb. 1955.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, no. 10, Oct. 1955, Uncl.

CERMAK, J.

Cermak, J.

Tractors reduce the costs of agricultural field work. p. 189.

Vol. 5, no. 10, May 1955
MECHANISACE ZEMEDILSTVI

SO: Monthly List of East European Accession, (EEAL),LC, Vol. 4, No. 9, Sept. 1955, Uncl.

CERMAK, J.; BORECKY, L.

CERMAK, J.; BORECKY, L. Work of a plant-therapy brigade of a machine-tractor station during the winter. p. 22.

Vol. 6, no. 2, Jan. 1956
MECHANISACE ZEMEDELSTVI
AGRICULTURE
Czechoslovakia

So: East European Accession, Vol. 6, No. 5, May 1957

CERMAK, J.; ZITTNER, F.

CERMAK, J.; ZITTNER, F. Learning from the analysis of used time in the plant-protection brigade of machine-tractor stations. p. 342.

Vol. 6, no. 18, Sept 1956
MACHANISACE ZEMNEDELSTVI
AGRICULTURE
Czechoslovakia

So: East European Accession, Vol. 6, No. 5, May 1957

CERNAK, J.

Difficulties of brigades for protecting plants in the machine-tractor stations. p. 452. (MECHANISACE ZEMEDELSTVI, Vol. 6, No. 23, Dec 1956, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 12, Dec 1957. Uncl.

CERMAK, J.

More economical construction of farm buildings.

P. 21, (Rolnicke Hlasy) Vol. 12, no. 7, July 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

GERMAK, J.

New trends in building stables for cattle.

P. 32, (Rolnicke Hlasy) Vol. 30, no. 4, Aug. 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

ČERMAK, J.

Experimental determination of the distance effect in fields on the efficiency of tractor units.

P. 269, (Sbornik Rada Zemedelska Ekonomika) Vol.30, no.4, Aug.1957, Praha, Czechoslovakia

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

CZECHOSLOVAKIA

CERMAK, J.; Research Institute for Physical Fitness (Vyzkumny ustav telovychovny), Prague.

"Respiratory Functions for O_2 and CO_2 in Trained Sportsmen, and Changes During Interrupted Exertion, with Discussion of Methods of Evaluation."

Prague, Ceskoslovenska Fysiologie, Vol 14, No 5, Oct 1965; p 342.

Abstract: Study in 22 runners and bicycle riders during running and 3 different types of efforts. The 4 criteria of respiratory efficiency are listed and illustrated graphically. Graph, 2 Czech references including thesis by author. Paper presented at the 15th Physiology Days, Olomouc, 27 May 65.

1/1

CZECHOSLOVAKIA

CERMAK, J: Research Institute for Physical Education (Vyzkumny Ustav Telovychovny), Prague.

"Usage of Oxygen During Extended Work in Equilibrium and Its Relation to Lung Ventilation."

Prague, Ceskoslovenska Fysiologie, Vol 15, No 2, Feb 66, p 119

Abstract: When the work being performed does not exceed the physical constitution of the person, the work is being done in a true equilibrium state. There is only a very small oxygen deficiency which does not increase during continuing work. Up to a definite intensity of work, lung ventilation increases practically linearly with oxygen usage. Experiments on 81 sportsmen indicated that adult men reached the equilibrium state more easily than do adolescents. No references. Submitted at "16 Days of Physiology" at Kosice, 29 Sep 65.

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CERMAK, J., inz.

Comparison of the pulse code modulation with the delta modulation. Slaboproudy obzor 25 no.4:232-233 Ap '64.

PISA, V., inz., CERMAK, J., arch.

Fastening and stanchioning of cattle in barns equipped for large-scale production. Zemedel tech 9 no. 5/6 429-444 D '63.

1. Ustav pro [redacted]edecicou soustavu hospodareni, Praha.

CERMAK, Jan

Hydraulic constructions, drainage of quarries, and conservation measures in the mining industry. p. 313

TECHNICKA PRACA. Czechoslovakia. Vol. 7, No. 7, July 1955

Monthly List of East European Accessions (EEAI), LC., Vol. 8, No. 9, September 1959
Uncl.

CZECHOSLOVAKIA / Chemical Technology, Chemical Products and Their H-5
Application. Water Treatment, Sewage.

Abs Jour : Ref Zhur - Khimiya, No 5, 1959, No. 15844

Author : Cermak, Jan
Inst : Not given
Title : The Project of Clarification of Waste Waters from the Coal Flotation Installations of the Ostrovsko-Karvinsky Coal Mine Basin

Orig Pub : Uhli, 1958, 8, No 8, 274-278

Abstract : No abstract given

Card 1/1

CERMAK, Jan, inz., dr.

Use and control of mine water in the Ostrava-Karvina coal field. Uhli 4 no.9:304-308 S '62.

1. Banske projekty, Ostrava.

CERMAK, Jan, MUDr.

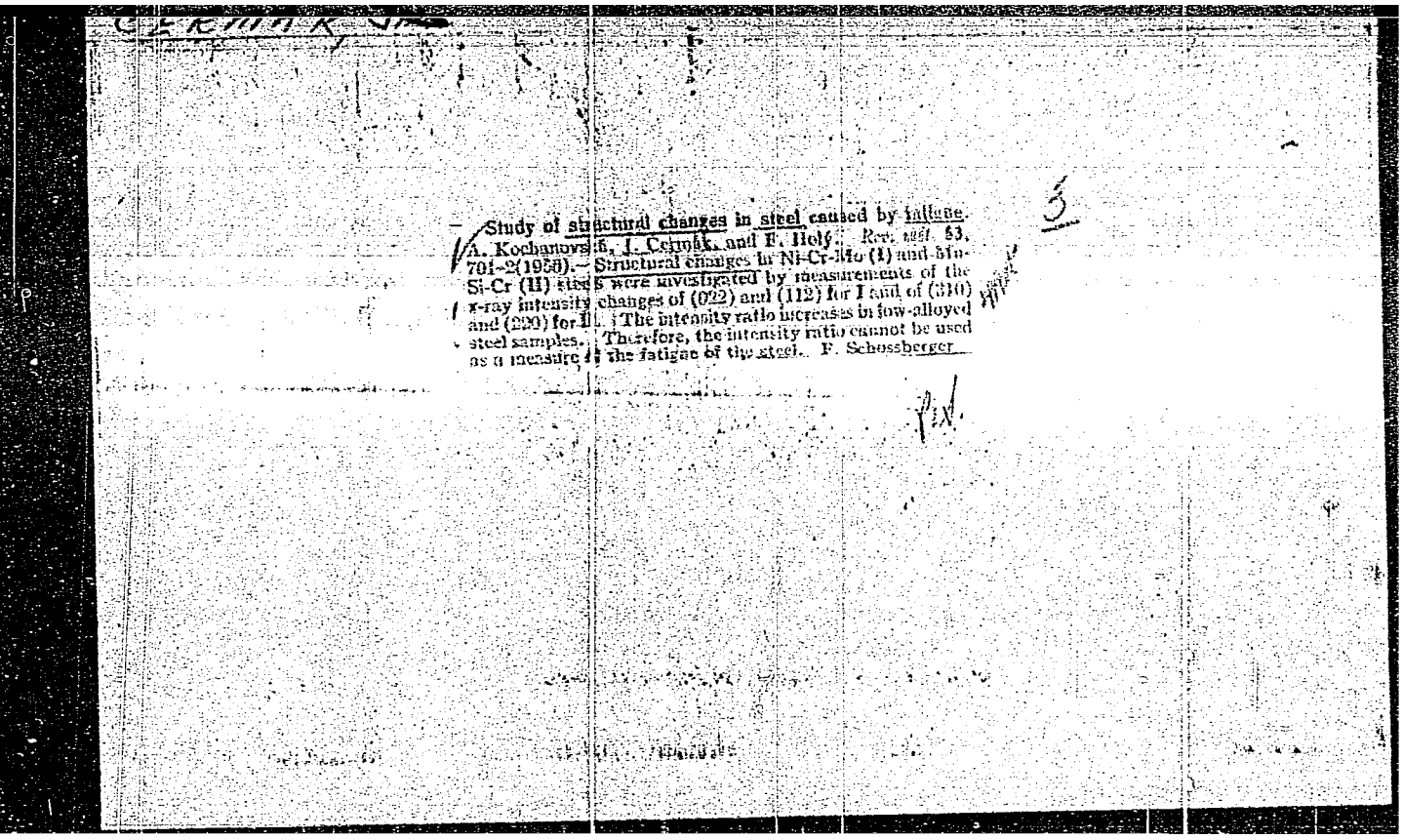
Work and experiences of a rural regional physician. Cesk. zdravot. 4 no.3:166-168 Mar 56.

1. Zdravotnicke strediska Trhova Kamenice, OUNZ Hlinsko.
(RURAL CONDITIONS,
regional physicians. (Cz))
(PUBLIC HEALTH,
in Csech., rural regional physicians. (Cz))

PISA, Vladimir, inz.; CERMAK, Jan, arch.

Influence of animal production specialization on the mechanization, transportation and design of large-scale production units. Zemedel techn 10 nc.6:369-380 Je '64

1. Institute of Scientific Economy Systems, Prague; Institute Director: J. Benda, inz. CSc.



Study of structural changes in steel caused by failure. A. Kochanovs, J. Cejnek, and F. Holý. *Rev. met.* 53, 701–2(1956).—Structural changes in Ni-Cr-Mo (I) and Si-Cr (II) steels were investigated by measurements of the x-ray intensity changes of (022) and (112) for I and of (310) and (220) for II. The intensity ratio increases in low-alloyed steel samples. Therefore, the intensity ratio cannot be used as a measure of the fatigue of the steel. F. Schossberger

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D291/D301

AUTHORS: Čermák, Jiří, and Roček, Jindřich

TITLE: Activities of the Theoretical Physics Department of the Nuclear Research Institute during 1954 - 1961

PERIODICAL: Jaderná energie, no. 10, 1961, 326-329

TEXT: The article briefly reviews the 1954-61 activities of the Theoretical Physics Department of the Nuclear Research Institute and lists research conducted in the field of reactor physics, to solve problems arising from the project of the first Czechoslovak nuclear research reactor. A list of publications, cited in this article, is given at the end. One of the major research items was neutron diffusion in the heterogeneous medium (Ref. 2: L. Trlifaj: Homogenizace heterogenního prostředí, Čs. čas. Fys. 6 (1956), p. 509); (Ref. 4: L. Trlifaj: On the anisotropy of a heterogeneous medium with respect to the diffusion of neutrons I, II, Czechosl. Journ. Phys. 7 (1957), pp. 397 and 593). An example is mentioned where the lattice of a heterogeneous reactor is

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homogenized by replacing the fuel rods and the moderator by an effective homogeneous medium. Neutron diffusion was studied in an infinite flat lattice with the aid of the kinetic theory of diffusion and compared with results achieved by the phenomenologic and other methods. The method of spherical harmonics was applied to solve concrete physical problems, e.g. calculation of the thermal neutron flux in the fuel element, and of the thermal utilization factor, etc. (Ref. 10: L. Trlifaj: Some aspects of the spherical harmonics method for neutron-transport problems in cylindrical geometry. Czechosl. Journ. Phys. 8 (1958), p. 390). Corrections of some erroneous assumptions, published in foreign papers on the equivalence method of spherical harmonics and the Wick-Chandrasekhar method of discrete coordinates, are made by L. Trlifaj (Ref. 11: O vztahu mezi sférických harmonických a metodu diskretních souřadnic. Czech. Journ. Phys. 9 (1959), p. 535). Irregularities in the heterogeneous lattice were another research subject and studies concentrated on boundary problems, i.e. determination of conditions on the boundary between the

Activities of the Theoretical ...

scattering medium and the vacuum (Milne's problem) or on the boundary of an infinitely large cylindrical black rod situated in an infinite medium, and the coherent determination of the extrapolated length or effective radius of the rod. The problem of the exchange of one block in a two-dimensional square lattice by another block with different physical properties was successfully solved by L. Trlifaj and J. Roček (Ref. 12: Zamena bloka v dvumernoy kvadratnoy reshotke. Atomnaya energiya 9 (1960), p.366). A formula was derived for the effective radius of a black rod and it was found that, at greater distances from the exchanged block, formulas for the deformation of the neutron density take on the same form as those for a homogeneous medium. Other studies dealt with the influence of regulation rods in a homogeneous reactor. Methods were investigated which not only allow determination of the efficiency of a regulation rod depending on the depth of insertion, but also the deformation of the neutron density in the vicinity of the rod. The multigroup theory was used for calculating reator parameters; however, simple criteria were sought to replace the physically improper sets of constants. These cri-

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Activities of the Theoretical ...

teria were found in the form of estimations of certain determinants compiled from the constants. The correctness of the convergence of the so-called "method of iteration of sources", not yet fully confirmed, could be verified. The homogeneous reactor calculations were made for light or heavy-water moderation with the fuel (U-235 or Pu-238) suspended in form of the oxide. Tables were established, containing the results of critical-parameter calculations. The uranium-plutonium cycle was calculated and the changes in the isotopic composition of the fuel during reactor operation, and the influence of these changes on the reactivity of the system were stated. It was found that Pu-239, produced in the reactor from slightly enriched uranium, could be used to enrich the natural uranium for the next reactor run. The burn-up of a reactor could thus be reduced from 10,000 to 2,000 Mwd/t. Finally, the Nuclear Research Institute also engaged in studies of theoretical nuclear physics, especially the theory of elementary particles, nuclear models, beta-decay, etc. (Ref. 26: I. Úlehla: Meson scattering on nucleons. Czech. Journ. Phys. 10 (1960), p. 701; L. Gomolčák, Z. Pluhař, I. Úlehla: Optický model

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